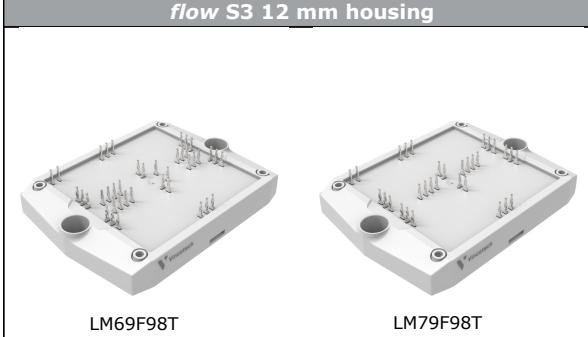
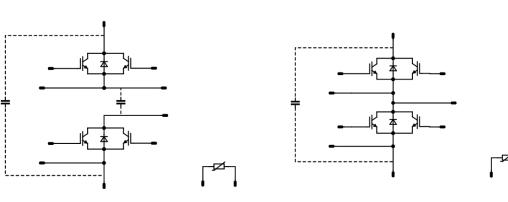




Vincotech

flowFC S3 split		950 V / 600 A
Features		
<ul style="list-style-type: none">• Low inductive mid-power package• High efficient Flying Capacitor topology• Optimized for 1500 V applications• Integrated DC capacitors		
Target applications		
<ul style="list-style-type: none">• Solar Inverters		
Types		
<ul style="list-style-type: none">• B0-SP10FSA600S7-LM69F98T• B0-SP10FSB600S7-LM79F98T		
	flow S3 12 mm housing	
	 LM69F98T LM79F98T	
	Schematic	
	 LM69F98T LM79F98T	



Vincotech

Maximum Ratings

$T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
AC 1 Switch L				
Collector-emitter voltage	V_{CES}		950	V
Collector current (DC current)	I_C	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	357	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	1200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	636	W
Gate-emitter voltage	V_{GES}		± 20	V
Maximum junction temperature	T_{jmax}		175	$^\circ\text{C}$

AC 1 Diode L

Peak repetitive reverse voltage	V_{RRM}		950	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	295	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	506	W
Maximum junction temperature	T_{jmax}		175	$^\circ\text{C}$

AC 1 Switch H

Collector-emitter voltage	V_{CES}		950	V
Collector current (DC current)	I_C	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	357	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	1200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	636	W
Gate-emitter voltage	V_{GES}		± 20	V
Maximum junction temperature	T_{jmax}		175	$^\circ\text{C}$

AC 1 Diode H

Peak repetitive reverse voltage	V_{RRM}		950	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	295	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	506	W
Maximum junction temperature	T_{jmax}		175	$^\circ\text{C}$



Vincotech

Maximum Ratings

$T_j = 25^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
AC 2 Switch L				
Collector-emitter voltage	V_{CES}		950	V
Collector current (DC current)	I_C	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	357	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	1200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	636	W
Gate-emitter voltage	V_{GES}		± 20	V
Maximum junction temperature	T_{jmax}		175	$^\circ\text{C}$

AC 2 Diode L

Peak repetitive reverse voltage	V_{RRM}		950	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	295	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	506	W
Maximum junction temperature	T_{jmax}		175	$^\circ\text{C}$

AC 2 Switch H

Collector-emitter voltage	V_{CES}		950	V
Collector current (DC current)	I_C	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	357	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	1200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	636	W
Gate-emitter voltage	V_{GES}		± 20	V
Maximum junction temperature	T_{jmax}		175	$^\circ\text{C}$

AC 2 Diode H

Peak repetitive reverse voltage	V_{RRM}		950	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	295	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	506	W
Maximum junction temperature	T_{jmax}		175	$^\circ\text{C}$



Vincotech

Maximum Ratings

$T_j = 25 \text{ }^\circ\text{C}$, unless otherwise specified

Parameter	Symbol	Conditions	Value	Unit
Flying Capacitor				
Maximum DC voltage	V_{MAX}		1000	V
Operation Temperature	T_{op}		-55 ... 125	$^\circ\text{C}$

Capacitor (DC)

Maximum DC voltage	V_{MAX}		1500	V
Operation Temperature	T_{op}		-55 ... 125	$^\circ\text{C}$

Module Properties

Thermal Properties

Storage temperature	T_{sig}		-40...+125	$^\circ\text{C}$
Operation temperature under switching condition	T_{jop}		-40...+($T_{jmax} - 25$)	$^\circ\text{C}$

Isolation Properties

Isolation voltage	V_{isol}	DC Test Voltage* $t_p = 2 \text{ s}$	6000	V
Creepage distance		LM69F98T LM79F98T	9,77 9,6	mm
Clearance		LM69F98T LM79F98T	8,72 8,22	mm
Comparative Tracking Index	CTI		≥ 600	

*100 % tested in production



B0-SP10FSA600S7-LM69F98T

B0-SP10FSB600S7-LM79F98T

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Vincotech

Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
		V_{GE} [V]	V_{GS} [V]	V_{CE} [V]	V_{DS} [V]	I_C [A]	T_j [°C]	Min	Typ	

AC 1 Switch L

Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}$			0,01002	25	4,35	5,1	5,85	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		600	25 125 150		1,79 2,05 2,09	2,35 ⁽¹⁾	V
Collector-emitter cut-off current	I_{CES}		0	950		25			12	µA
Gate-emitter leakage current	I_{GES}		20	0		25			600	nA
Internal gate resistance	r_g							0,25		Ω
Input capacitance	C_{res}	$f = 100$ kHz	0	25	25	25	39000	834	120	pF
Output capacitance	C_{oes}									
Reverse transfer capacitance	C_{res}									
Gate charge	Q_g		15		0	25		1380		nC

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 4,4$ W/mK (PTM)						0,15		K/W
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Dynamic

Turn-on delay time	$t_{d(on)}$	$R_{gon} = 2 \Omega$ $R_{goff} = 2 \Omega$	± 15	600	600	25		197,76		
Rise time	t_r					125		198,72		
						150		199,36		ns
Turn-off delay time	$t_{d(off)}$					25		25,92		
						125		28,16		
Fall time	t_f					150		28,48		ns
Turn-on energy (per pulse)	E_{on}	$Q_{fFWD}=17,07 \mu C$ $Q_{rFWD}=36,66 \mu C$ $Q_{tFWD}=42 \mu C$				25		148,16		
						125		170,88		
						150		176,64		ns
Turn-off energy (per pulse)	E_{off}					25		23,26		
						125		41,21		
						150		46,35		ns
						25		29,9		
						125		33,52		
						150		33,7		mWs
						25		15,19		
						125		23,63		
						150		25,62		mWs

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datasheet

Vincotech**Characteristic Values**

Parameter	Symbol	Conditions						Values			Unit
		V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max			

AC 1 Diode L**Static**

Forward voltage	V_F				600	25 125 150	2,1	2,58 2,41 2,35	2,8 ⁽¹⁾	V
Reverse leakage current	I_R	$V_r = 950$ V			25			24	μ A	

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 4,4$ W/mK (PTM)						0,19		K/W
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Dynamic

Peak recovery current	I_{RRM}	$di/dt=19055$ A/ μ s $di/dt=19448$ A/ μ s $di/dt=19304$ A/ μ s	± 15	600	600	25		361,81 540,11 587,56		A
Reverse recovery time	t_{rr}					25		142,07		ns
Recovered charge	Q_r					125		173,11		
						150		182,02		
Reverse recovered energy	E_{rec}					25		17,07		μ C
Peak rate of fall of recovery current	$(di_{rr}/dt)_{max}$					125		36,66		
						150		42		
						25		4,8		mWs
						125		12,05		
						150		14,24		
						25		15319		
						125		13469		
						150		14003		A/μ s



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Vincotech

Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
		V_{GE} [V]	V_{GS} [V]	V_{CE} [V]	V_{DS} [V]	I_C [A]	T_j [°C]	Min	Typ	

AC 1 Switch H

Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}$			0,01002	25	4,35	5,1	5,85	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		600	25 125 150		1,79 2,05 2,09	2,35 ⁽¹⁾	V
Collector-emitter cut-off current	I_{CES}		0	950		25			12	µA
Gate-emitter leakage current	I_{GES}		20	0		25			600	nA
Internal gate resistance	r_g							0,25		Ω
Input capacitance	C_{res}	$f = 100$ kHz	0	25	25	25	39000	834	120	pF
Output capacitance	C_{oes}									
Reverse transfer capacitance	C_{res}									
Gate charge	Q_g		15		0	25		1380		nC

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 4,4$ W/mK (PTM)						0,15		K/W
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Dynamic

Turn-on delay time	$t_{d(on)}$	$R_{gon} = 2 \Omega$ $R_{goff} = 2 \Omega$	± 15	600	600	25		197,76		
Rise time	t_r					125		198,72		
						150		199,36		ns
Turn-off delay time	$t_{d(off)}$					25		25,92		
						125		28,16		
Fall time	t_f					150		28,48		ns
Turn-on energy (per pulse)	E_{on}	$Q_{fFWD}=17,07 \mu C$ $Q_{rFWD}=36,66 \mu C$ $Q_{tFWD}=42 \mu C$				25		148,16		
						125		170,88		
						150		176,64		ns
Turn-off energy (per pulse)	E_{off}					25		23,26		
						125		41,21		
						150		46,35		ns
						25		29,9		
						125		33,52		
						150		33,7		mWs
						25		15,19		
						125		23,63		
						150		25,62		mWs

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Vincotech**Characteristic Values**

Parameter	Symbol	Conditions						Values			Unit
		V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max			

AC 1 Diode H**Static**

Forward voltage	V_F				600	25 125 150	2,1	2,58 2,41 2,35	2,8 ⁽¹⁾	V
Reverse leakage current	I_R	$V_F = 950$ V			25			24	μ A	

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 4,4$ W/mK (PTM)						0,19		K/W
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Dynamic

Peak recovery current	I_{RRM}	$di/dt=19055$ A/ μ s $di/dt=19448$ A/ μ s $di/dt=19304$ A/ μ s	± 15	600	600	25		361,81 540,11 587,56		A
Reverse recovery time	t_{rr}					25		142,07		ns
Recovered charge	Q_r					125		173,11		
						150		182,02		
Reverse recovered energy	E_{rec}					25		17,07		μ C
Peak rate of fall of recovery current	$(di_{rr}/dt)_{max}$					125		36,66		
						150		42		
						25		4,8		mWs
						125		12,05		
						150		14,24		
						25		15319		
						125		13469		
						150		14003		A/μ s



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Vincotech

Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
		V_{GE} [V]	V_{GS} [V]	V_{CE} [V]	V_{DS} [V]	I_C [A]	T_j [°C]	Min	Typ	

AC 2 Switch L

Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}$			0,01002	25	4,35	5,1	5,85	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15		600	25 125 150		1,79 2,05 2,09	2,35 ⁽¹⁾	V
Collector-emitter cut-off current	I_{CES}		0	950		25			12	µA
Gate-emitter leakage current	I_{GES}		20	0		25			600	nA
Internal gate resistance	r_g							0,25		Ω
Input capacitance	C_{res}	$f = 100 \text{ kHz}$	0	25	25	25	39000	834	120	pF
Output capacitance	C_{oes}									
Reverse transfer capacitance	C_{res}									
Gate charge	Q_g		15		0	25		1380		nC

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 4,4 \text{ W/mK}$ (PTM)						0,15		K/W
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Dynamic

Turn-on delay time	$t_{d(on)}$	$R_{gon} = 2 \Omega$ $R_{goff} = 2 \Omega$	± 15	600	600	25		199,04		
Rise time	t_r					125		200,32		ns
						150		200,64		
Turn-off delay time	$t_{d(off)}$					25		24,32		
						125		26,56		
Fall time	t_f					150		27,52		ns
Turn-on energy (per pulse)	E_{on}					25		151,04		
		$Q_{fFWD}=17,05 \mu\text{C}$ $Q_{rFWD}=38,32 \mu\text{C}$ $Q_{tFWD}=44,72 \mu\text{C}$				125		175,36		
						150		181,76		ns
Turn-off energy (per pulse)	E_{off}					25		22,91		
						125		42,32		
						150		49,49		ns
						25		29,33		
						125		33,29		mWs
						150		34,4		
						25		15,06		
						125		23,9		mWs
						150		26,74		

**B0-SP10FSA600S7-LM69F98T****B0-SP10FSB600S7-LM79F98T**

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Vincotech**Characteristic Values**

Parameter	Symbol	Conditions						Values			Unit
		V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max			

AC 2 Diode L**Static**

Forward voltage	V_F				600	25 125 150	2,1	2,58 2,41 2,35	2,8 ⁽¹⁾	V
Reverse leakage current	I_R	$V_F = 950$ V			25			24	μA	

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 4,4$ W/mK (PTM)						0,19		K/W
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Dynamic

Peak recovery current	I_{RRM}	$di/dt=20877$ A/μs $di/dt=20334$ A/μs $di/dt=20767$ A/μs	± 15	600	600	25		377,72		A			
Reverse recovery time	t_{rr}					125		572,15					
						150		625,39					
Recovered charge	Q_r					25		138,55		ns			
						125		173,65					
						150		187,29					
Reverse recovered energy	E_{rec}	± 15				25		17,05		μC			
						125		38,32					
						150		44,72					
Peak rate of fall of recovery current	$(di_{rr}/dt)_{max}$	600				25		4,65		mWs			
						125		12,41					
						150		15,01					
		600				25		16716		A/μs			
						125		15210					
						150		15877					



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B0-SP10FSB600S7-LM79F98T

datasheet

Vincotech

Characteristic Values

Parameter	Symbol	Conditions					Values			Unit
		V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max		

AC 2 Switch H

Static

Gate-emitter threshold voltage	$V_{GE(\text{th})}$	$V_{CE} = V_{GE}$			0,01002	25	4,35	5,1	5,85	V
Collector-emitter saturation voltage	$V_{CE(\text{sat})}$		15		600	25 125 150		1,79 2,05 2,09	2,35 ⁽¹⁾	V
Collector-emitter cut-off current	I_{CES}		0	950		25			12	µA
Gate-emitter leakage current	I_{GES}		20	0		25			600	nA
Internal gate resistance	r_g							0,25		Ω
Input capacitance	C_{res}	$f = 100 \text{ kHz}$	0	25	25	25	39000	834	120	pF
Output capacitance	C_{oes}									
Reverse transfer capacitance	C_{res}									
Gate charge	Q_g		15		0	25		1380		nC

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{\text{paste}} = 4,4 \text{ W/mK}$ (PTM)						0,15		K/W
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Dynamic

Turn-on delay time	$t_{d(on)}$	$R_{gon} = 2 \Omega$ $R_{goff} = 2 \Omega$	± 15	600	600	25		199,04		
Rise time	t_r					125		200,32		ns
						150		200,64		
Turn-off delay time	$t_{d(off)}$					25		24,32		
						125		26,56		
Fall time	t_f					150		27,52		ns
Turn-on energy (per pulse)	E_{on}					25		151,04		
		$Q_{fFWD}=17,05 \mu\text{C}$ $Q_{rfFWD}=38,32 \mu\text{C}$ $Q_{ffFWD}=44,72 \mu\text{C}$				125		175,36		
						150		181,76		ns
Turn-off energy (per pulse)	E_{off}					25		22,91		
						125		42,32		
						150		49,49		ns
						25		29,33		
						125		33,29		mWs
						150		34,4		
						25		15,06		
						125		23,9		mWs
						150		26,74		

**B0-SP10FSA600S7-LM69F98T****B0-SP10FSB600S7-LM79F98T**

datasheet

Vincotech**Characteristic Values**

Parameter	Symbol	Conditions						Values			Unit
		V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max			

AC 2 Diode H**Static**

Forward voltage	V_F				600	25 125 150	2,1	2,58 2,41 2,35	2,8 ⁽¹⁾	V
Reverse leakage current	I_R	$V_F = 950$ V			25			24	μA	

Thermal

Thermal resistance junction to sink ⁽²⁾	$R_{th(j-s)}$	$\lambda_{paste} = 4,4$ W/mK (PTM)						0,19		K/W
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Dynamic

Peak recovery current	I_{RRM}	$di/dt=20877$ A/μs $di/dt=20334$ A/μs $di/dt=20767$ A/μs	± 15	600	600	25		377,72		A			
Reverse recovery time	t_{rr}					125		572,15					
						150		625,39					
Recovered charge	Q_r					25		138,55		ns			
						125		173,65					
						150		187,29					
Reverse recovered energy	E_{rec}	± 15				25		17,05		μC			
						125		38,32					
						150		44,72					
Peak rate of fall of recovery current	$(di_{rr}/dt)_{max}$	600				25		4,65		mWs			
						125		12,41					
						150		15,01					
		600				25		16716		A/μs			
						125		15210					
						150		15877					

**B0-SP10FSA600S7-LM69F98T****B0-SP10FSB600S7-LM79F98T**

datasheet

Vincotech**Characteristic Values**

Parameter	Symbol	Conditions					Values			Unit
		V_{GE} [V] V_{GS} [V]	V_{CE} [V] V_{DS} [V] V_F [V]	I_C [A] I_D [A] I_F [A]	T_j [°C]	Min	Typ	Max		

Flying Capacitor**Static**

Capacitance	C	DC bias voltage = 0 V				25		400		nF
Tolerance							-10		10	%
Dissipation factor		$f = 1$ kHz				25		2,5		%

Capacitor (DC)**Static**

Capacitance	C	DC bias voltage = 0 V				25		112		nF
Tolerance							-10		10	%
Dissipation factor		$f = 1$ kHz				25		2,5		%

Thermistor**Static**

Rated resistance	R					25		22		kΩ
Deviation of R_{100}	$A_{R/R}$	$R_{100} = 1484 \Omega$				100	-5		5	%
Power dissipation	P							5		mW
Power dissipation constant	d					25		1,5		mW/K
B-value	$B_{(25/50)}$	Tol. ±1 %						3962		K
B-value	$B_{(25/100)}$	Tol. ±1 %						4000		K
Vincotech Thermistor Reference									I	

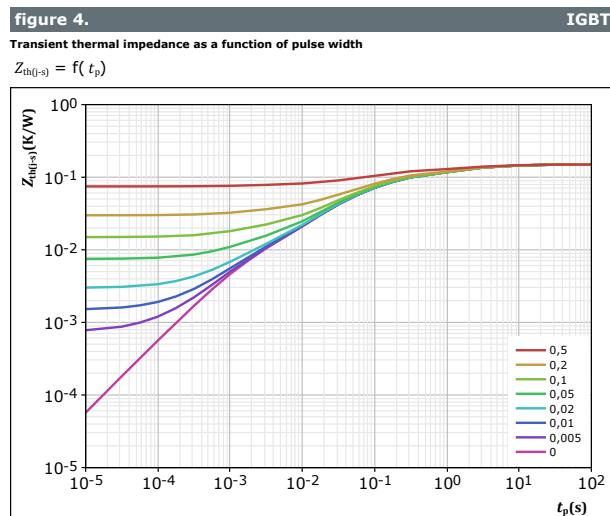
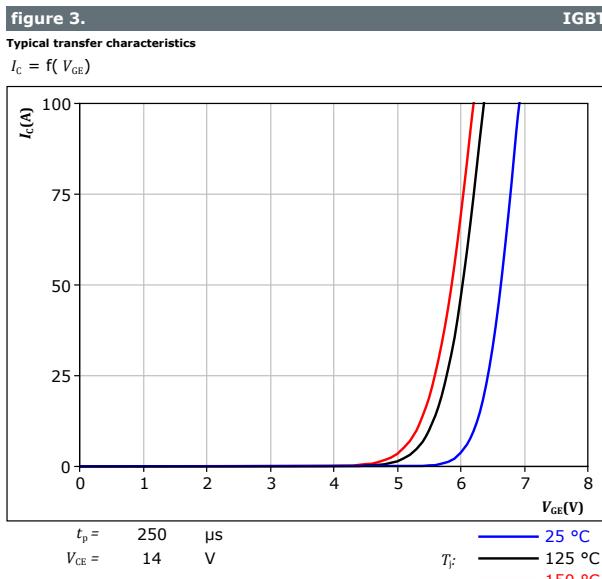
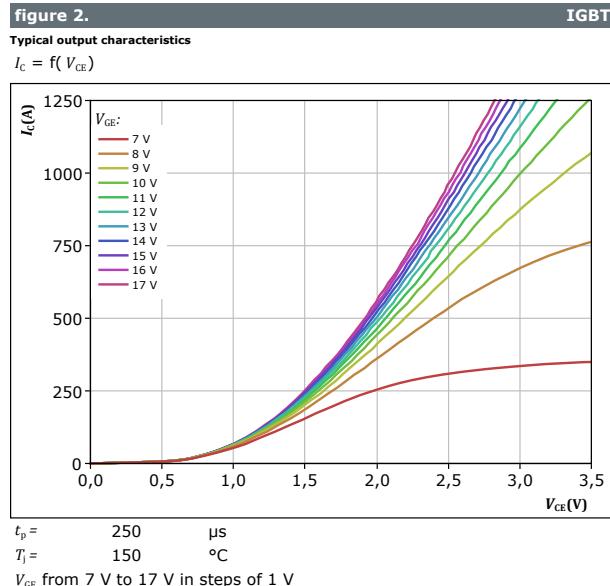
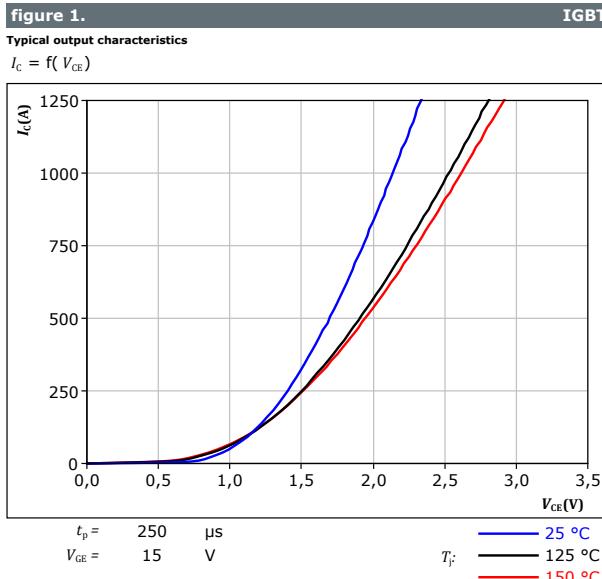
(1) Value at chip level

(2) Only valid with pre-applied Vincotech thermal interface material.



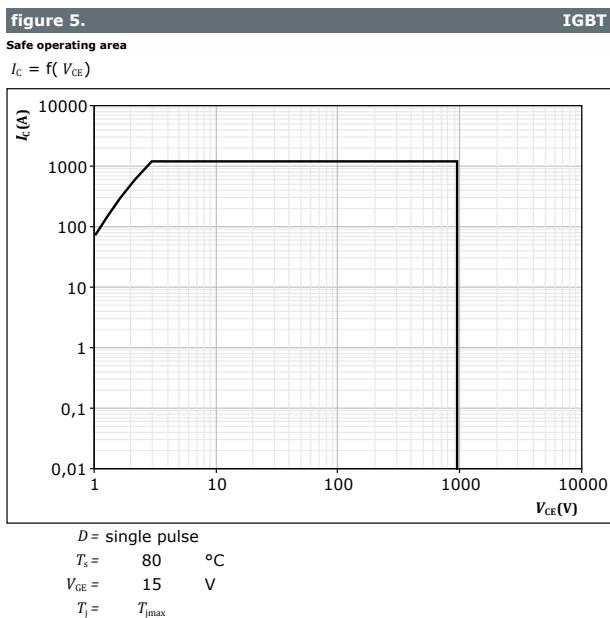
Vincotech

AC 1, AC 2 Switch L Characteristics





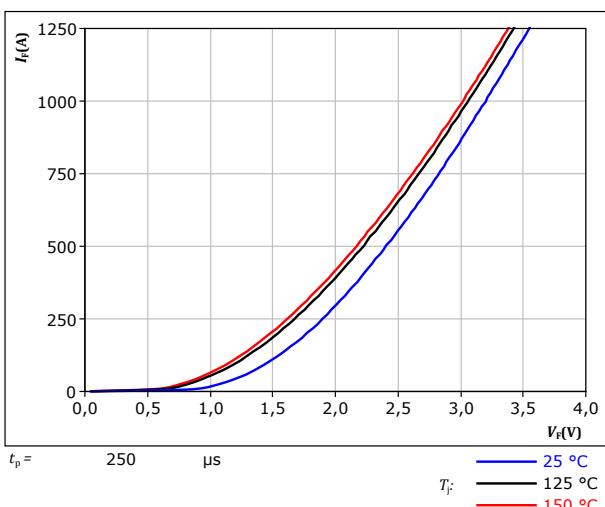
AC 1, AC 2 Switch L Characteristics





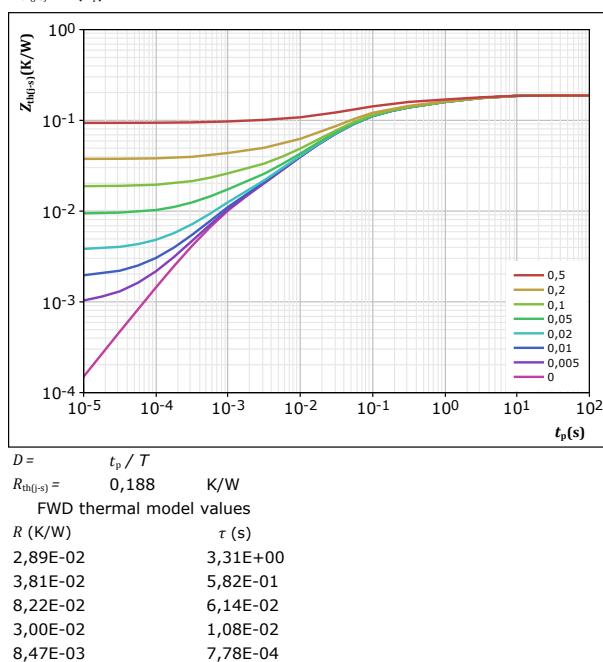
AC 1, AC 2 Diode L Characteristics

figure 6.
Typical forward characteristics
 $I_F = f(V_F)$



FWD

figure 7.
Transient thermal impedance as a function of pulse width
 $Z_{th(j-s)} = f(t_p)$



FWD

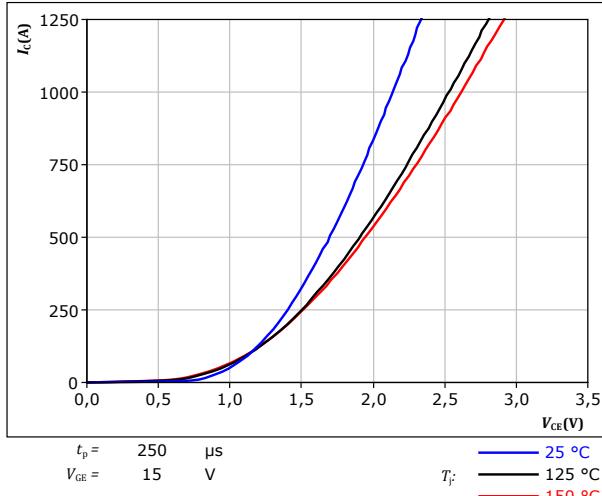


Vincotech

AC 1, AC 2 Switch H Characteristics

figure 8. IGBT

Typical output characteristics
 $I_C = f(V_{CE})$



IGBT

figure 9. IGBT

Typical output characteristics
 $I_C = f(V_{CE})$

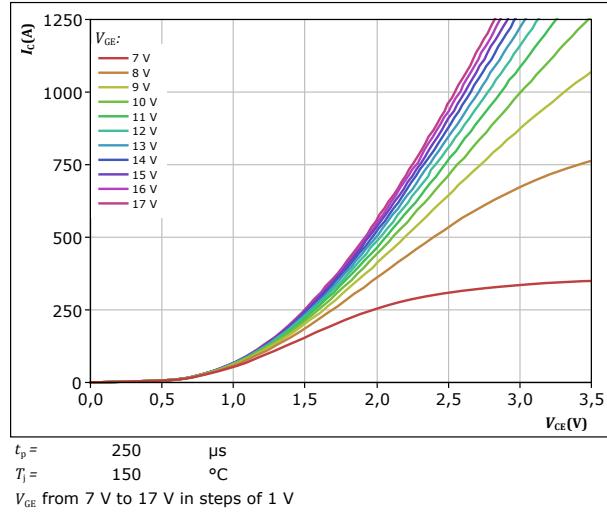
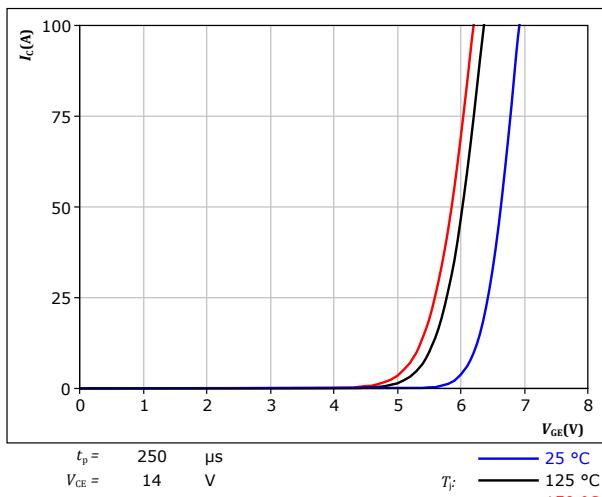


figure 10. IGBT

Typical transfer characteristics
 $I_C = f(V_{GE})$

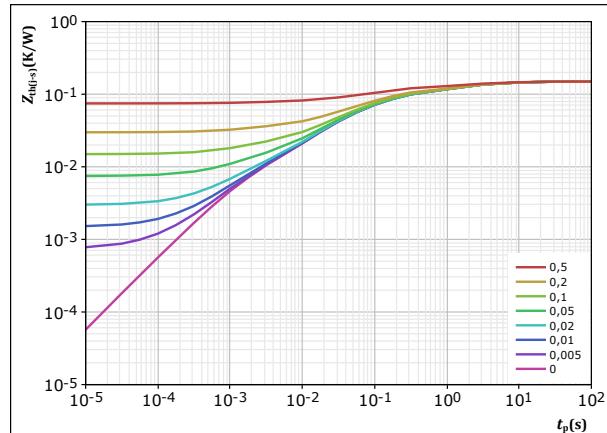


IGBT

figure 11. IGBT

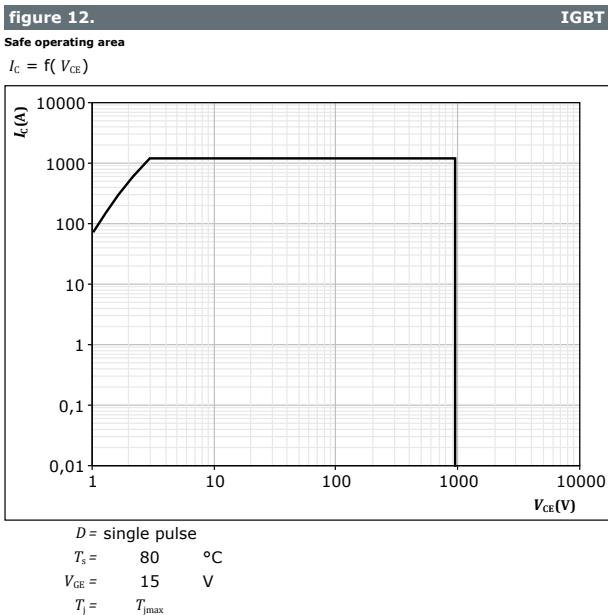
Transient thermal impedance as a function of pulse width

$Z_{th(j-s)} = f(t_p)$





AC 1, AC 2 Switch H Characteristics





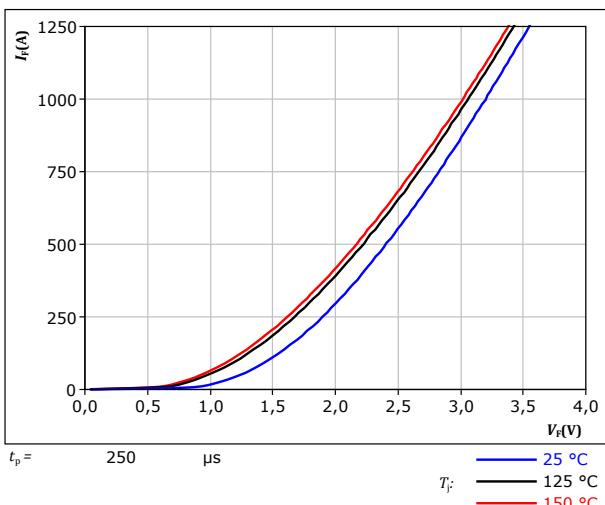
AC 1, AC 2 Diode H Characteristics

figure 13.

Typical forward characteristics

$$I_F = f(V_F)$$

FWD



$$t_p = 250 \mu\text{s}$$

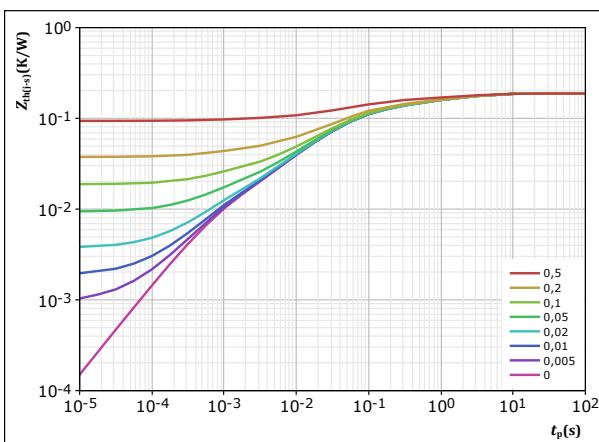
$T_J:$
— 25 °C
— 125 °C
— 150 °C

figure 14.

Transient thermal impedance as a function of pulse width

$$Z_{th(j-s)} = f(t_p)$$

FWD



$$D = \frac{t_p / \tau}{0,188}$$

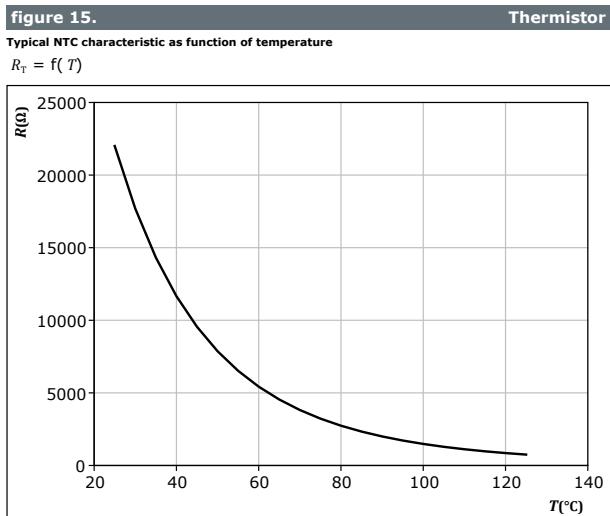
R_{th(j-s)} = 0,188 K/W

FWD thermal model values

R (K/W)	τ (s)
2,89E-02	3,31E+00
3,81E-02	5,82E-01
8,22E-02	6,14E-02
3,00E-02	1,08E-02
8,47E-03	7,78E-04



Thermistor Characteristics



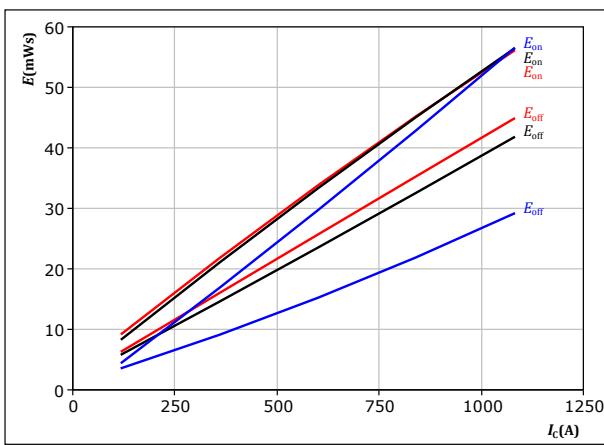


Vincotech

AC 1 Switching Characteristics L

figure 16. IGBT

Typical switching energy losses as a function of collector current
 $E = f(I_c)$



With an inductive load at

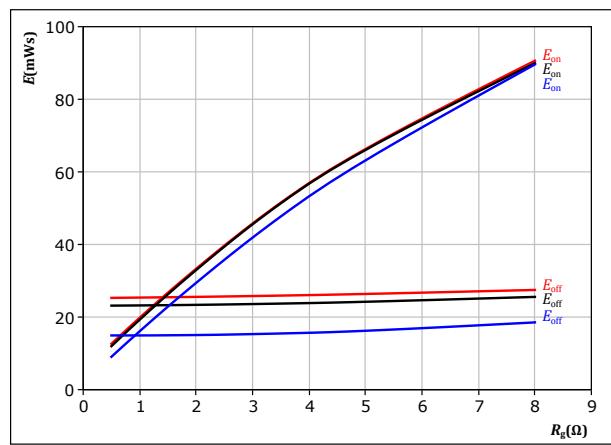
$V_{CE} = 600$ V $T_f = 25$ °C
 $V_{GE} = \pm 15$ V $T_f = 125$ °C
 $R_{gon} = 2$ Ω $T_f = 150$ °C
 $R_{goff} = 2$ Ω

figure 17. IGBT

Typical switching energy losses as a function of gate resistor
 $E = f(R_g)$

figure 17. IGBT

Typical switching energy losses as a function of gate resistor
 $E = f(R_g)$



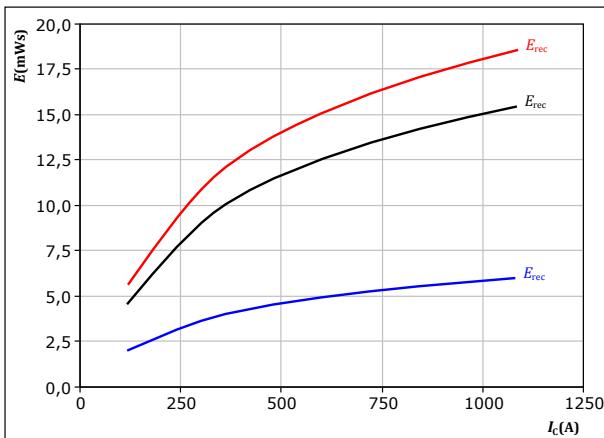
With an inductive load at

$V_{CE} = 600$ V $T_f = 25$ °C
 $V_{GE} = \pm 15$ V $T_f = 125$ °C
 $I_c = 600$ A $T_f = 150$ °C

figure 18. FWD

Typical reverse recovered energy loss as a function of collector current

$E_{rec} = f(I_c)$



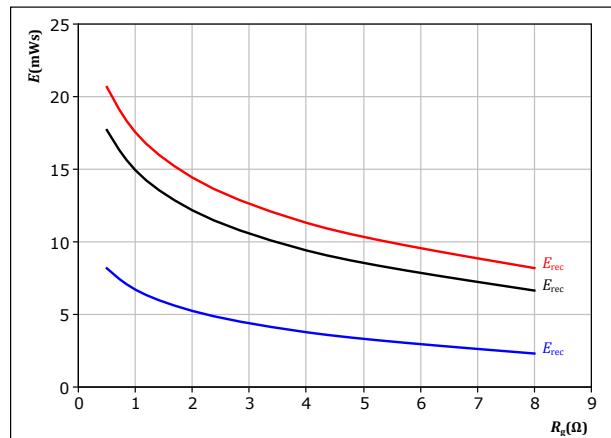
With an inductive load at

$V_{CE} = 600$ V $T_f = 25$ °C
 $V_{GE} = \pm 15$ V $T_f = 125$ °C
 $R_{gon} = 2$ Ω $T_f = 150$ °C

figure 19. FWD

Typical reverse recovered energy loss as a function of gate resistor

$E_{rec} = f(R_g)$



With an inductive load at

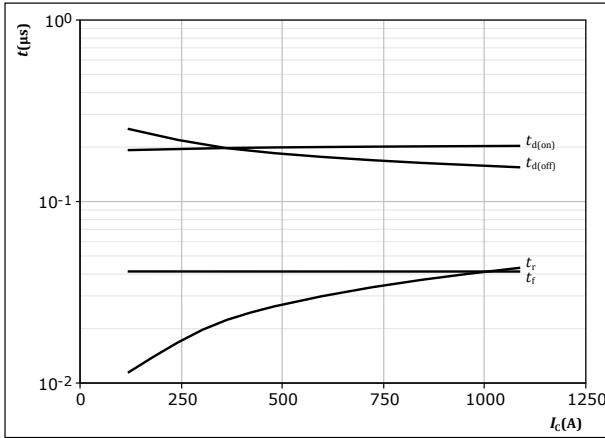
$V_{CE} = 600$ V $T_f = 25$ °C
 $V_{GE} = \pm 15$ V $T_f = 125$ °C
 $I_c = 600$ A $T_f = 150$ °C



AC 1 Switching Characteristics L

figure 20. IGBT

Typical switching times as a function of collector current
 $t = f(I_C)$

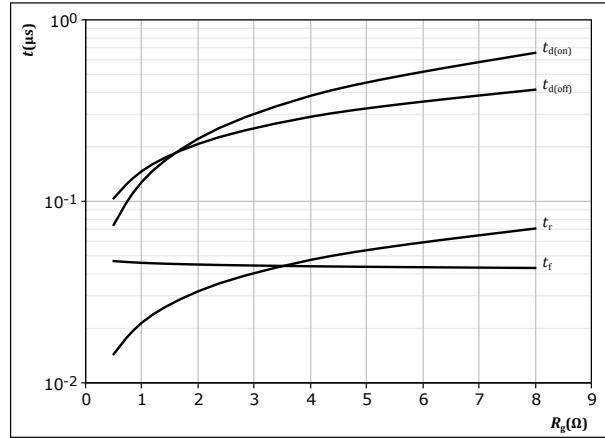


With an inductive load at

$T_j = 150^\circ\text{C}$
 $V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 2 \Omega$
 $R_{goff} = 2 \Omega$

figure 21. IGBT

Typical switching times as a function of gate resistor
 $t = f(R_g)$

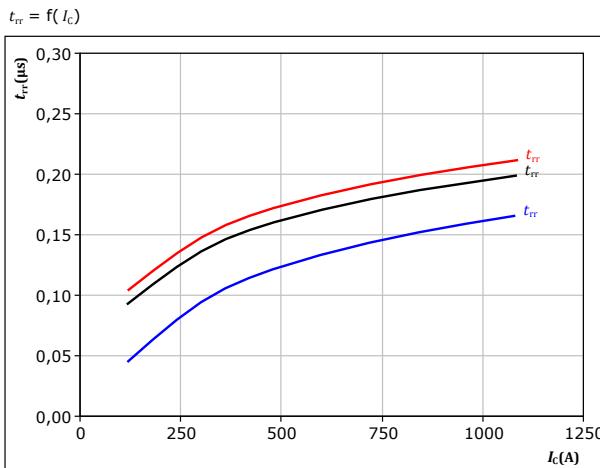


With an inductive load at

$T_j = 150^\circ\text{C}$
 $V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $I_C = 600 \text{ A}$

figure 22. FWD

Typical reverse recovery time as a function of collector current
 $t_{rr} = f(I_C)$

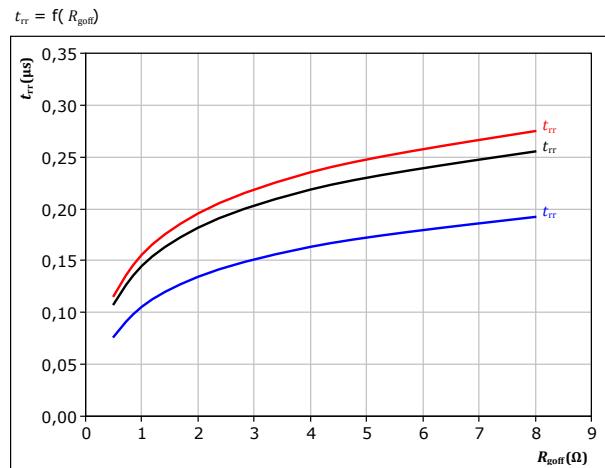


With an inductive load at

$V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 2 \Omega$

figure 23. FWD

Typical reverse recovery time as a function of IGBT turn off gate resistor
 $t_{rr} = f(R_{goff})$



With an inductive load at

$V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $I_C = 600 \text{ A}$



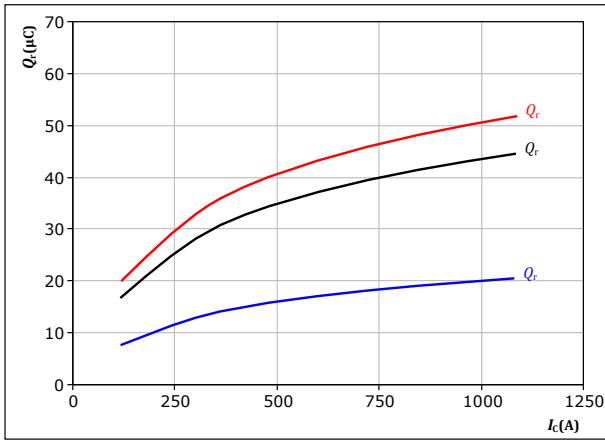
AC 1 Switching Characteristics L

figure 24.

FWD

Typical recovered charge as a function of collector current

$$Q_r = f(I_c)$$



With an inductive load at

$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ R_{gon} &= 2 \Omega \end{aligned}$$

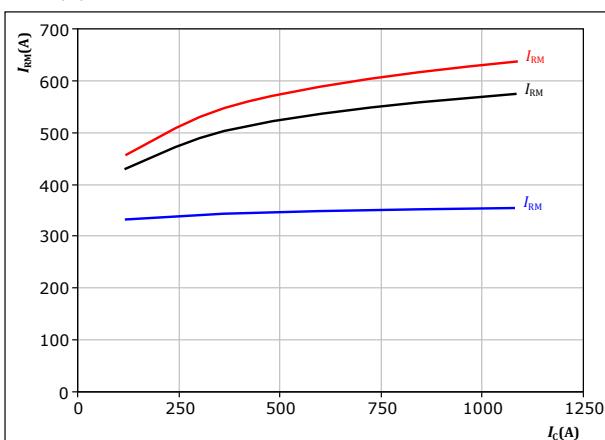
$$T_f: \quad \begin{array}{ll} \text{---} & 25 \text{ }^{\circ}\text{C} \\ \text{---} & 125 \text{ }^{\circ}\text{C} \\ \text{---} & 150 \text{ }^{\circ}\text{C} \end{array}$$

figure 26.

FWD

Typical peak reverse recovery current as a function of collector current

$$I_{RM} = f(I_c)$$



With an inductive load at

$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ R_{gon} &= 2 \Omega \end{aligned}$$

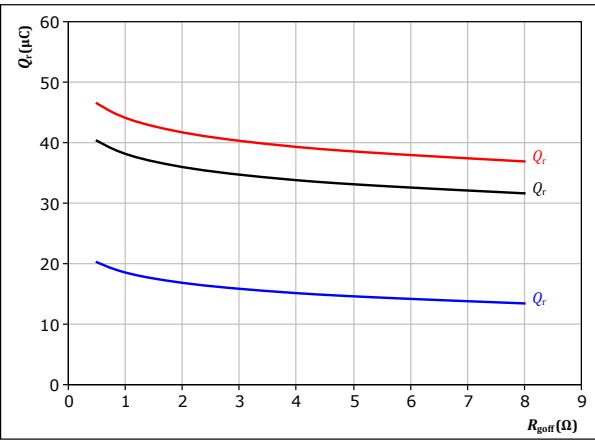
$$T_f: \quad \begin{array}{ll} \text{---} & 25 \text{ }^{\circ}\text{C} \\ \text{---} & 125 \text{ }^{\circ}\text{C} \\ \text{---} & 150 \text{ }^{\circ}\text{C} \end{array}$$

figure 25.

FWD

Typical recovered charge as a function of turn off gate resistor

$$Q_r = f(R_{go\bar{f}})$$



With an inductive load at

$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ I_c &= 600 \text{ A} \end{aligned}$$

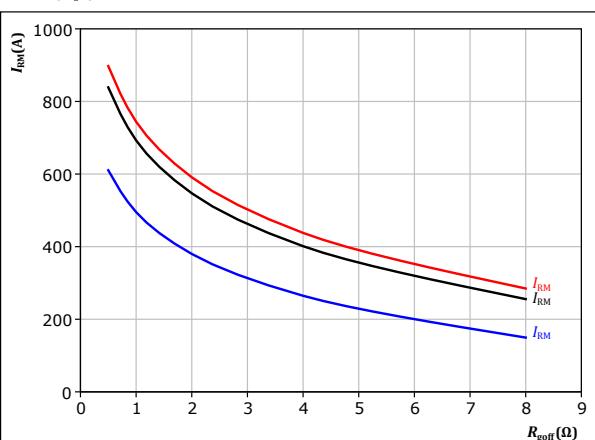
$$T_f: \quad \begin{array}{ll} \text{---} & 25 \text{ }^{\circ}\text{C} \\ \text{---} & 125 \text{ }^{\circ}\text{C} \\ \text{---} & 150 \text{ }^{\circ}\text{C} \end{array}$$

figure 27.

FWD

Typical peak reverse recovery current as a function of turn off gate resistor

$$I_{RM} = f(R_{go\bar{f}})$$



With an inductive load at

$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ I_c &= 600 \text{ A} \end{aligned}$$

$$T_f: \quad \begin{array}{ll} \text{---} & 25 \text{ }^{\circ}\text{C} \\ \text{---} & 125 \text{ }^{\circ}\text{C} \\ \text{---} & 150 \text{ }^{\circ}\text{C} \end{array}$$



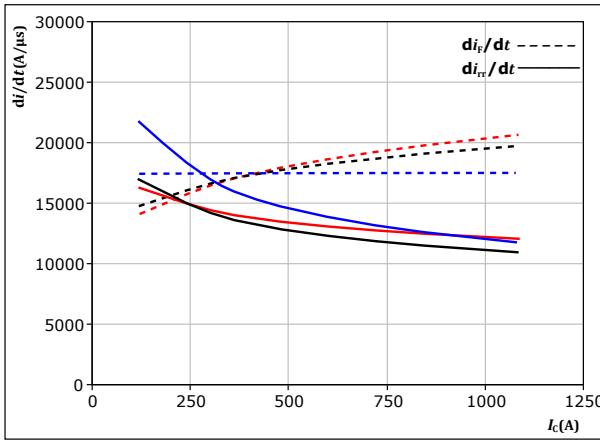
Vincotech

AC 1 Switching Characteristics L

figure 28. FWD

Typical rate of fall of forward and reverse recovery current as a function of collector current

$di_f/dt, di_{rr}/dt = f(I_c)$



With an inductive load at

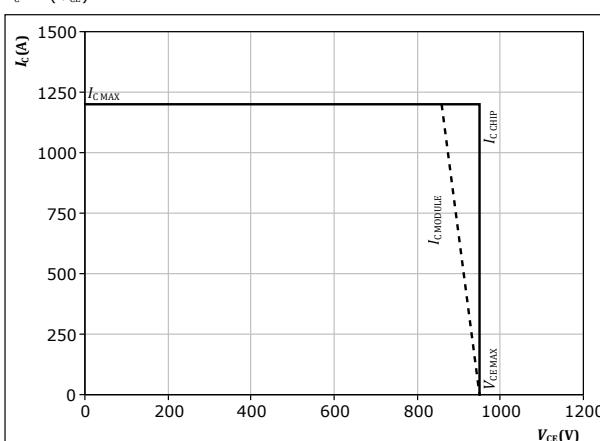
$V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 2 \Omega$

$T_j:$ — 25 °C
— 125 °C
— 150 °C

figure 30. IGBT

Reverse bias safe operating area

$I_c = f(V_{CE})$

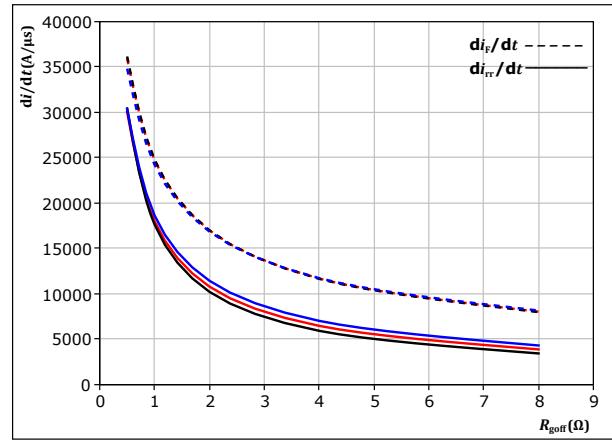


At $T_j = 150 \text{ °C}$
 $R_{gon} = 2 \Omega$
 $R_{goff} = 2 \Omega$

figure 29. FWD

Typical rate of fall of forward and reverse recovery current as a function of turn off gate resistor

$di_f/dt, di_{rr}/dt = f(R_{goff})$



With an inductive load at

$V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $I_c = 600 \text{ A}$

$T_j:$ — 25 °C
— 125 °C
— 150 °C

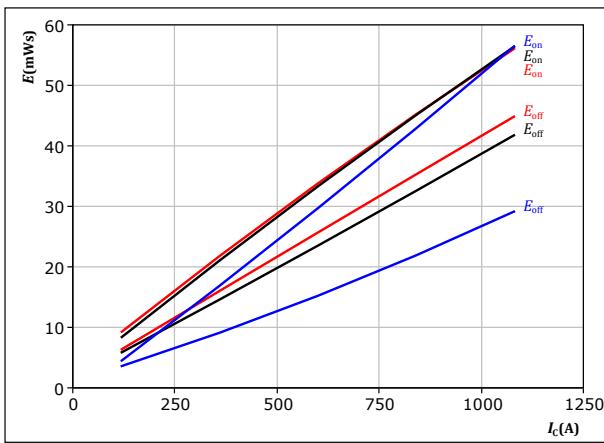


Vincotech

AC 1 Switching Characteristics H

figure 31. IGBT

Typical switching energy losses as a function of collector current
 $E = f(I_c)$

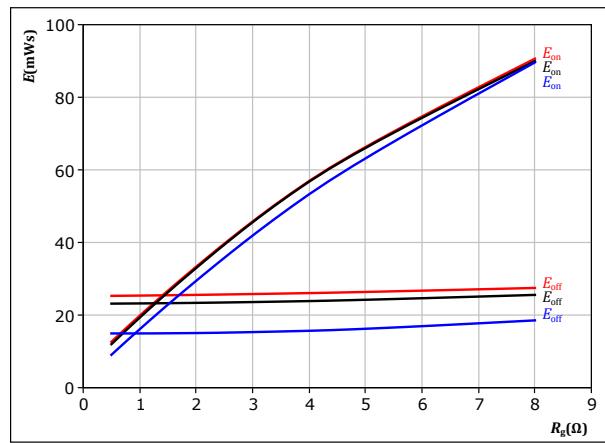


With an inductive load at

$V_{CE} = 600$ V $T_f:$ 25 °C
 $V_{GE} = \pm 15$ V 125 °C
 $R_{gon} = 2$ Ω 150 °C
 $R_{goff} = 2$ Ω

figure 32. IGBT

Typical switching energy losses as a function of gate resistor
 $E = f(R_g)$



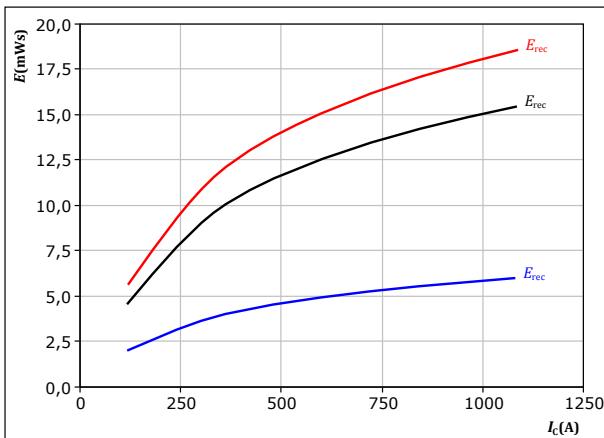
With an inductive load at

$V_{CE} = 600$ V $T_f:$ 25 °C
 $V_{GE} = \pm 15$ V 125 °C
 $I_c = 600$ A 150 °C

figure 33. FWD

Typical reverse recovered energy loss as a function of collector current

$E_{rec} = f(I_c)$



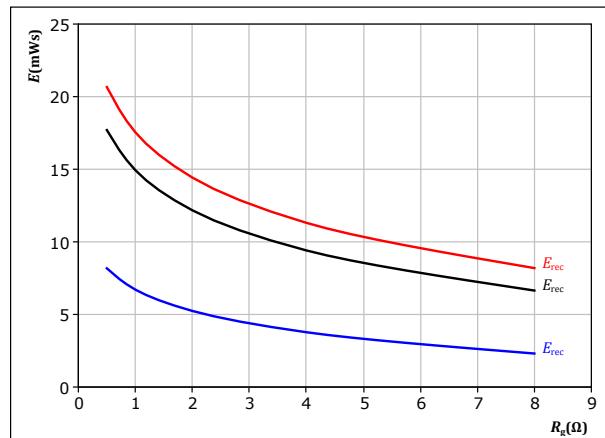
With an inductive load at

$V_{CE} = 600$ V $T_f:$ 25 °C
 $V_{GE} = \pm 15$ V 125 °C
 $R_{gon} = 2$ Ω 150 °C

figure 34. FWD

Typical reverse recovered energy loss as a function of gate resistor

$E_{rec} = f(R_g)$



With an inductive load at

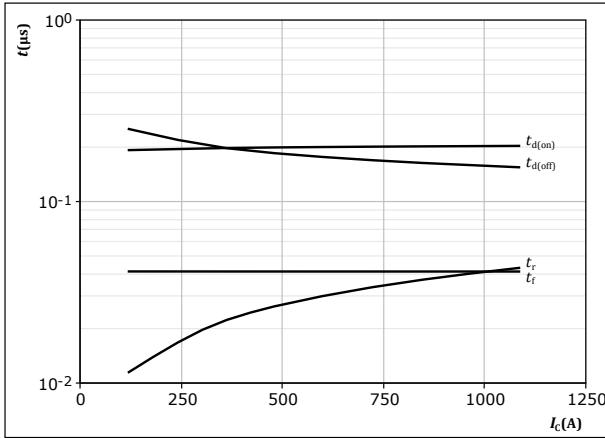
$V_{CE} = 600$ V $T_f:$ 25 °C
 $V_{GE} = \pm 15$ V 125 °C
 $I_c = 600$ A 150 °C



AC 1 Switching Characteristics H

figure 35. IGBT

Typical switching times as a function of collector current
 $t = f(I_C)$

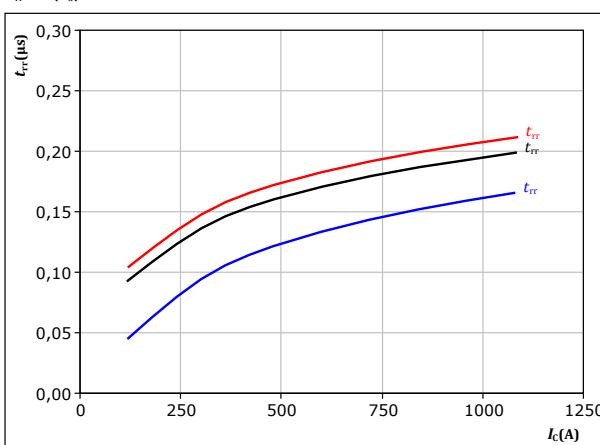


With an inductive load at

$T_j = 150^\circ\text{C}$
 $V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 2 \Omega$
 $R_{goff} = 2 \Omega$

figure 37. FWD

Typical reverse recovery time as a function of collector current
 $t_{rr} = f(I_C)$



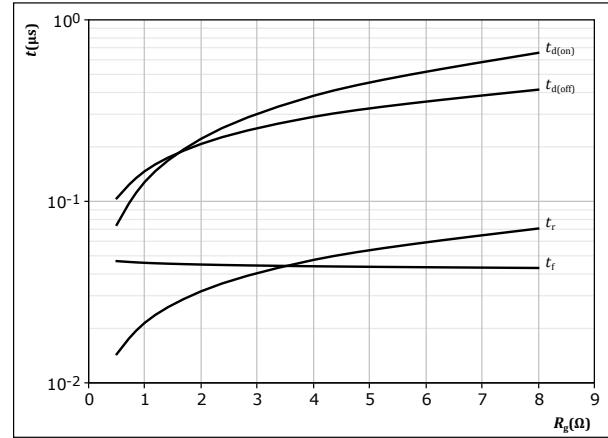
With an inductive load at

$V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 2 \Omega$

$T_j:$ — 25 °C
— 125 °C
— 150 °C

figure 36. IGBT

Typical switching times as a function of gate resistor
 $t = f(R_g)$

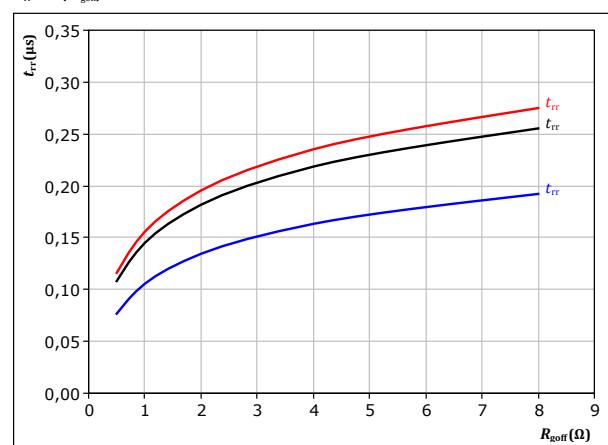


With an inductive load at

$T_j = 150^\circ\text{C}$
 $V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $I_C = 600 \text{ A}$

figure 38. FWD

Typical reverse recovery time as a function of IGBT turn off gate resistor
 $t_{rr} = f(R_{goff})$



With an inductive load at

$V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $I_C = 600 \text{ A}$

$T_j:$ — 25 °C
— 125 °C
— 150 °C

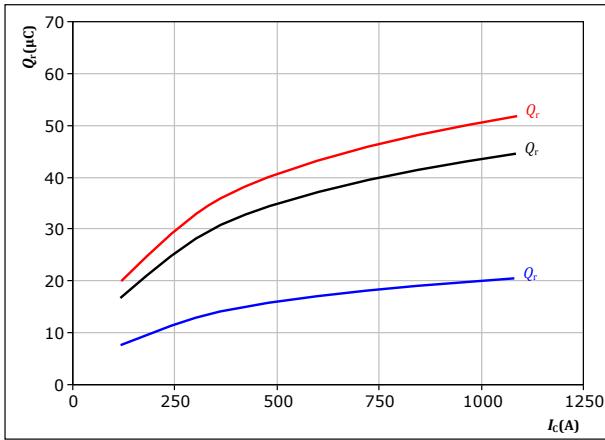


AC 1 Switching Characteristics H

figure 39.

Typical recovered charge as a function of collector current

$$Q_r = f(I_c)$$



With an inductive load at

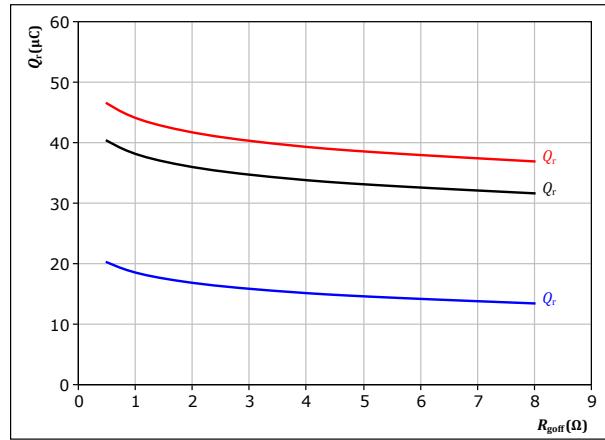
$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ R_{gon} &= 2 \Omega \end{aligned}$$

FWD

figure 40.

Typical recovered charge as a function of turn off gate resistor

$$Q_r = f(R_{go\bar{n}})$$



With an inductive load at

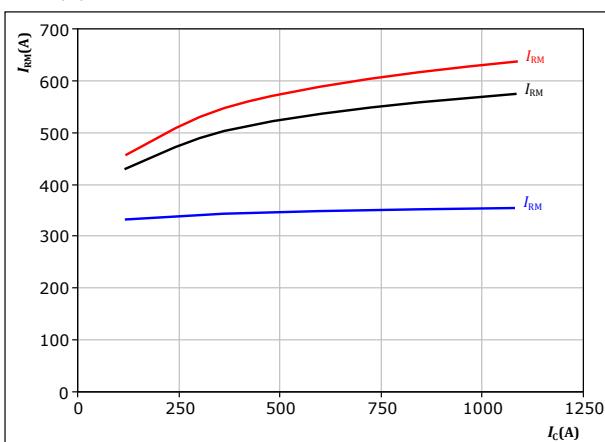
$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ I_c &= 600 \text{ A} \end{aligned}$$

FWD

figure 41.

Typical peak reverse recovery current as a function of collector current

$$I_{RM} = f(I_c)$$



With an inductive load at

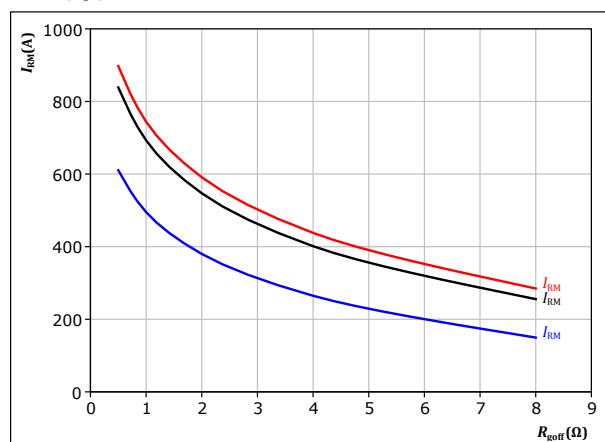
$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ R_{gon} &= 2 \Omega \end{aligned}$$

FWD

figure 42.

Typical peak reverse recovery current as a function of turn off gate resistor

$$I_{RM} = f(R_{go\bar{n}})$$



With an inductive load at

$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ I_c &= 600 \text{ A} \end{aligned}$$

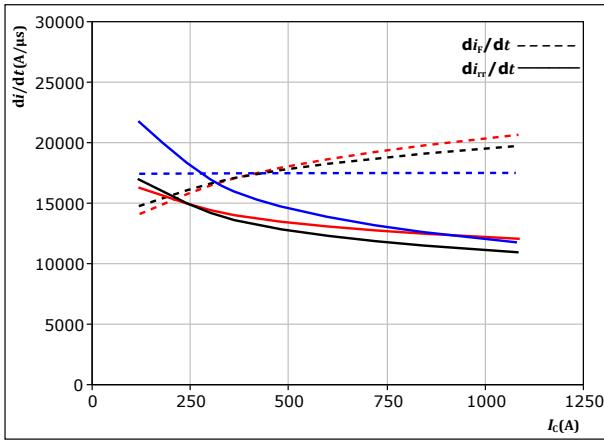
FWD



AC 1 Switching Characteristics H

figure 43. FWD

Typical rate of fall of forward and reverse recovery current as a function of collector current
 $di_f/dt, di_{rr}/dt = f(I_c)$

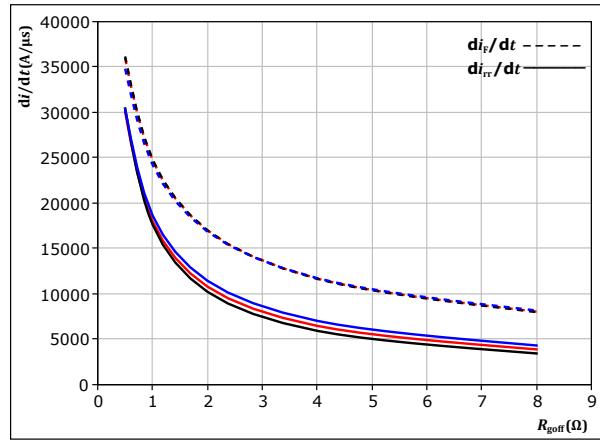


With an inductive load at

$V_{CE} = 600 \text{ V}$ $T_j = 25^\circ\text{C}$
 $V_{GE} = \pm 15 \text{ V}$ $T_j = 125^\circ\text{C}$
 $R_{gon} = 2 \Omega$ $T_j = 150^\circ\text{C}$

figure 44. FWD

Typical rate of fall of forward and reverse recovery current as a function of turn off gate resistor
 $di_f/dt, di_{rr}/dt = f(R_{goff})$



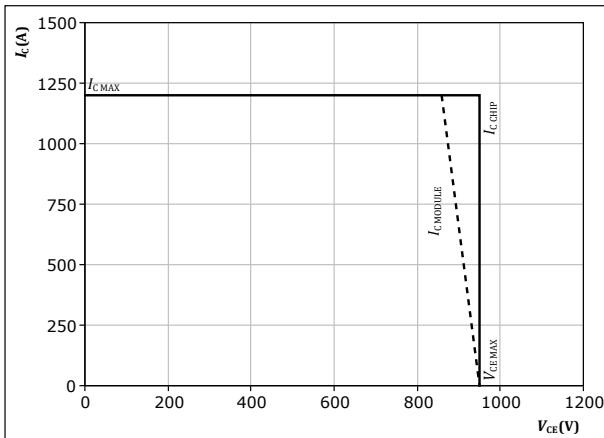
With an inductive load at

$V_{CE} = 600 \text{ V}$ $T_j = 25^\circ\text{C}$
 $V_{GE} = \pm 15 \text{ V}$ $T_j = 125^\circ\text{C}$
 $I_c = 600 \text{ A}$ $T_j = 150^\circ\text{C}$

figure 45. IGBT

Reverse bias safe operating area

$I_c = f(V_{CE})$



At $T_j = 150^\circ\text{C}$
 $R_{gon} = 2 \Omega$
 $R_{goff} = 2 \Omega$

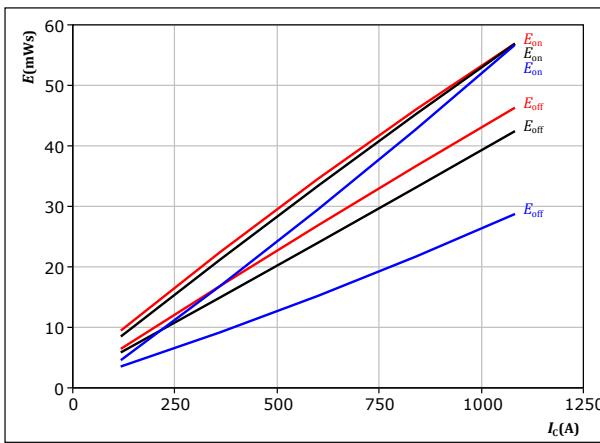


Vincotech

AC 2 Switching Characteristics L

figure 16. IGBT

Typical switching energy losses as a function of collector current
 $E = f(I_c)$

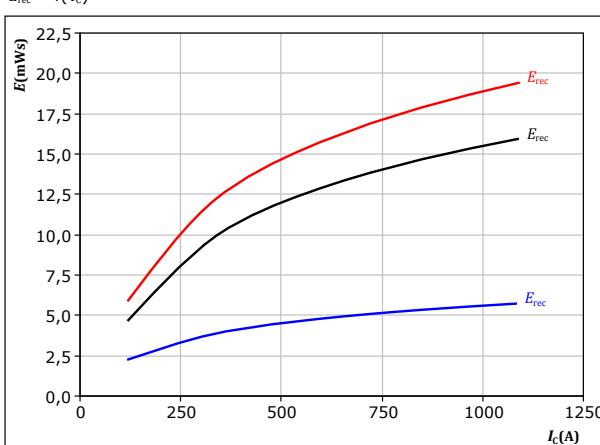


With an inductive load at

$V_{CE} = 600$ V $T_f:$ 25 °C
 $V_{GE} = \pm 15$ V 125 °C
 $R_{gon} = 2$ Ω 150 °C
 $R_{goff} = 2$ Ω

figure 18. FWD

Typical reverse recovered energy loss as a function of collector current
 $E_{rec} = f(I_c)$

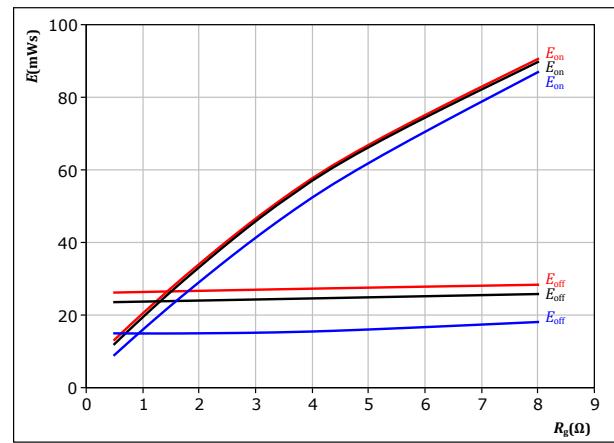


With an inductive load at

$V_{CE} = 600$ V $T_f:$ 25 °C
 $V_{GE} = \pm 15$ V 125 °C
 $R_{gon} = 2$ Ω 150 °C

figure 17. IGBT

Typical switching energy losses as a function of gate resistor
 $E = f(R_g)$

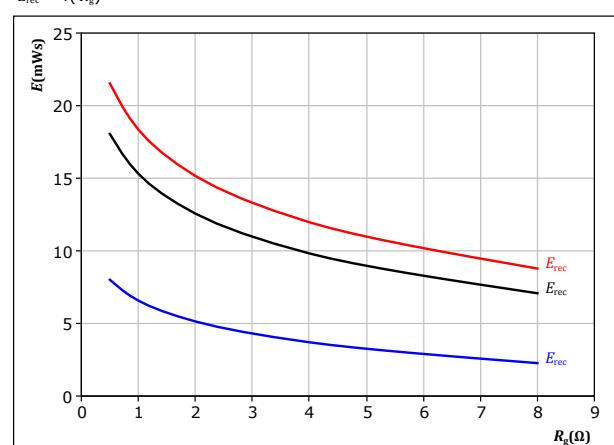


With an inductive load at

$V_{CE} = 600$ V $T_f:$ 25 °C
 $V_{GE} = \pm 15$ V 125 °C
 $I_c = 600$ A 150 °C

figure 19. FWD

Typical reverse recovered energy loss as a function of gate resistor
 $E_{rec} = f(R_g)$



With an inductive load at

$V_{CE} = 600$ V $T_f:$ 25 °C
 $V_{GE} = \pm 15$ V 125 °C
 $I_c = 600$ A 150 °C

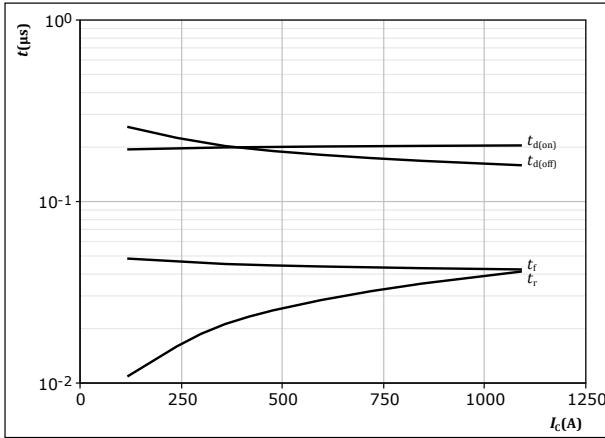


Vincotech

AC 2 Switching Characteristics L

figure 20. IGBT

Typical switching times as a function of collector current
 $t = f(I_C)$

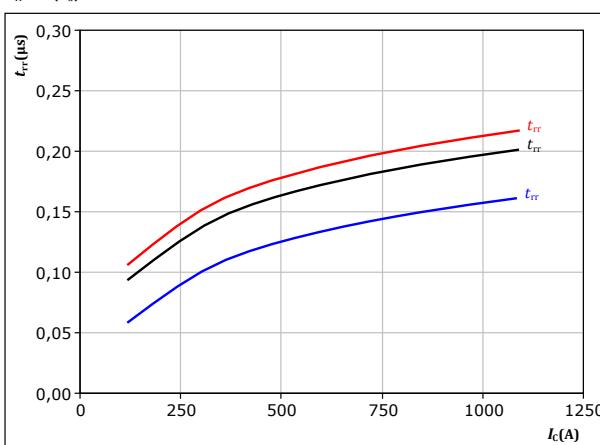


With an inductive load at

$T_j = 150^\circ\text{C}$
 $V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 2 \Omega$
 $R_{goff} = 2 \Omega$

figure 22. FWD

Typical reverse recovery time as a function of collector current
 $t_{rr} = f(I_C)$

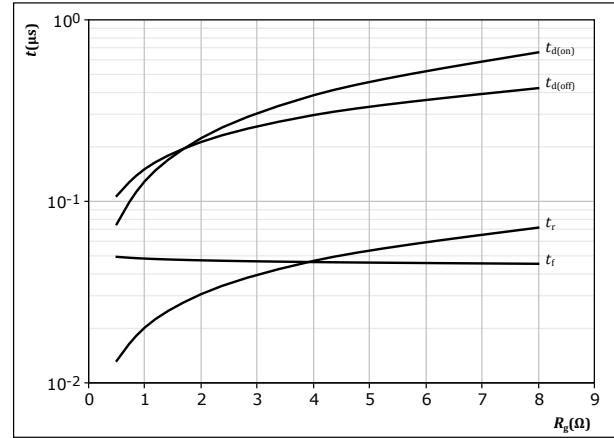


With an inductive load at

$V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 2 \Omega$

figure 21. IGBT

Typical switching times as a function of gate resistor
 $t = f(R_g)$

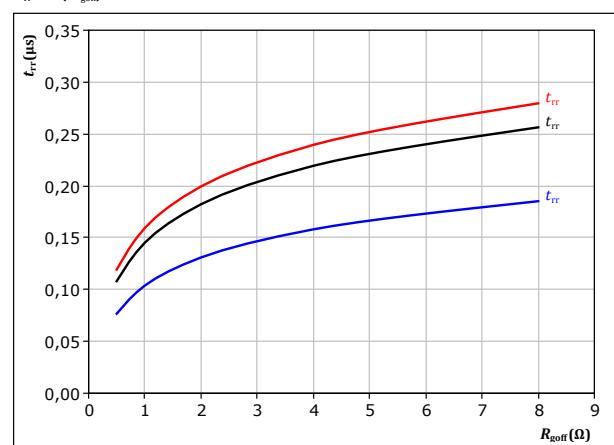


With an inductive load at

$T_j = 150^\circ\text{C}$
 $V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $I_C = 600 \text{ A}$

figure 23. FWD

Typical reverse recovery time as a function of IGBT turn off gate resistor
 $t_{rr} = f(R_{goff})$



With an inductive load at

$V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $I_C = 600 \text{ A}$

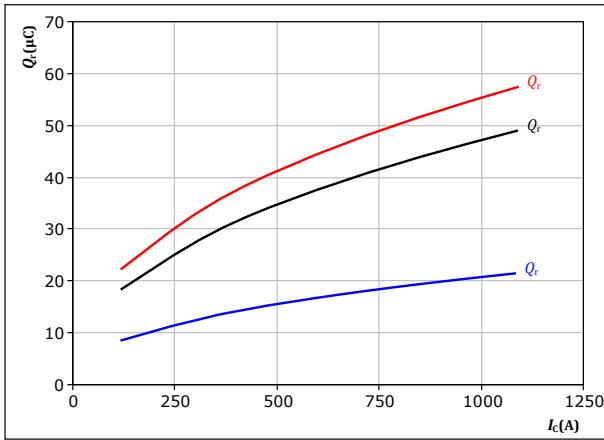


AC 2 Switching Characteristics L

figure 24.

Typical recovered charge as a function of collector current

$$Q_r = f(I_c)$$



With an inductive load at

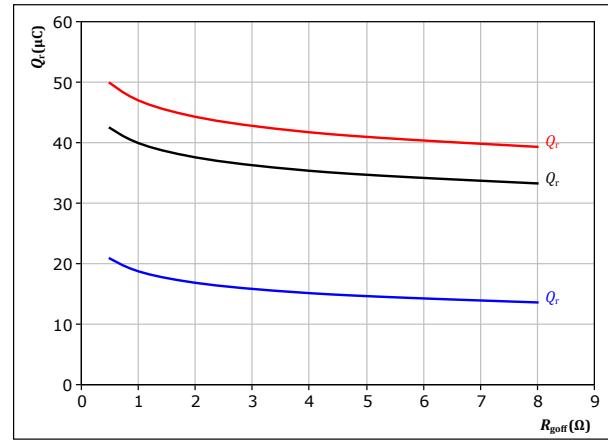
$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ R_{gon} &= 2 \Omega \end{aligned}$$

FWD

figure 25.

Typical recovered charge as a function of turn off gate resistor

$$Q_r = f(R_{go\bar{n}})$$



With an inductive load at

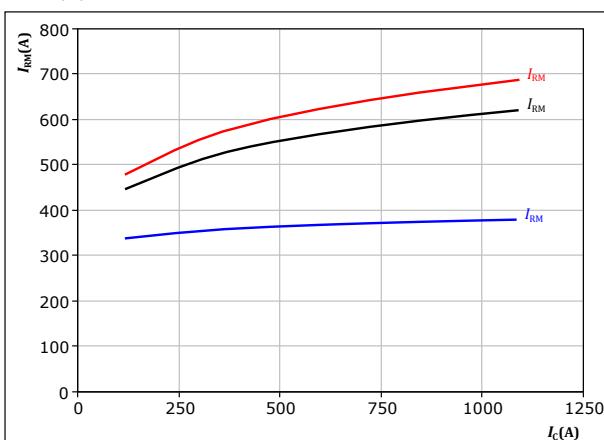
$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ I_c &= 600 \text{ A} \end{aligned}$$

FWD

figure 26.

Typical peak reverse recovery current as a function of collector current

$$I_{RM} = f(I_c)$$



With an inductive load at

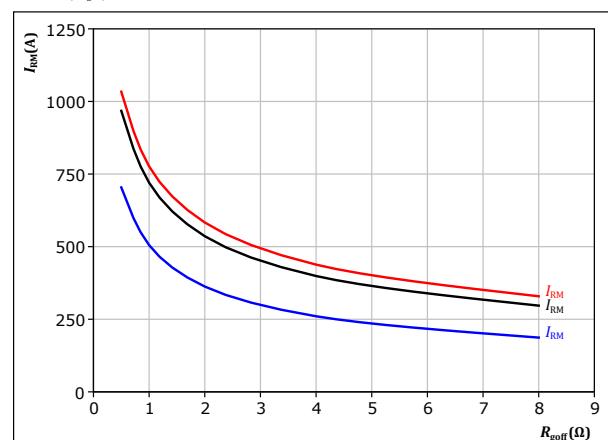
$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ R_{gon} &= 2 \Omega \end{aligned}$$

FWD

figure 27.

Typical peak reverse recovery current as a function of turn off gate resistor

$$I_{RM} = f(R_{go\bar{n}})$$



With an inductive load at

$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ I_c &= 600 \text{ A} \end{aligned}$$

FWD



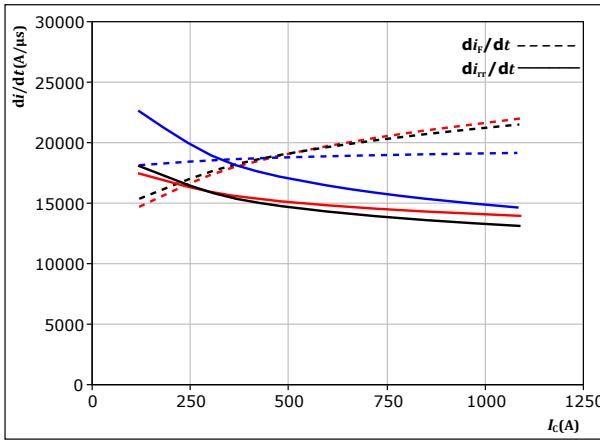
Vincotech

AC 2 Switching Characteristics L

figure 28. FWD

Typical rate of fall of forward and reverse recovery current as a function of collector current

$di_f/dt, di_{rr}/dt = f(I_c)$



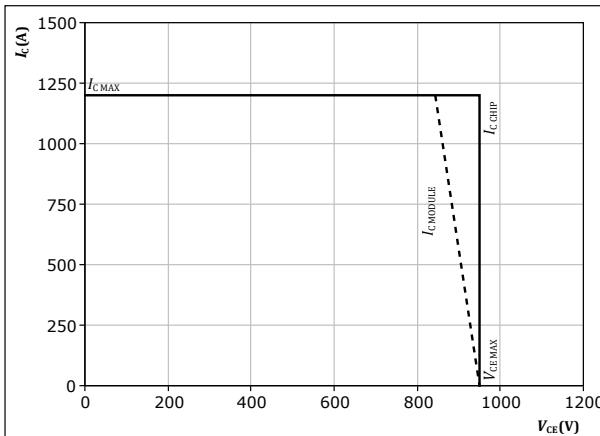
With an inductive load at

$V_{CE} =$	600	V	$T_j =$	25 °C
$V_{GE} =$	± 15	V		125 °C
$R_{gon} =$	2	Ω		150 °C

figure 30. IGBT

Reverse bias safe operating area

$I_C = f(V_{CE})$



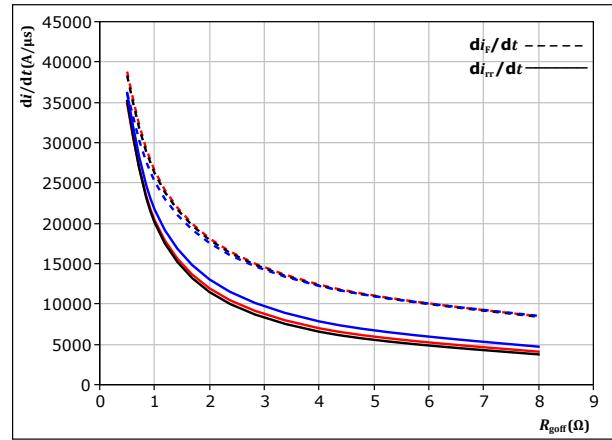
At $T_j = 150$ °C

$R_{gon} =$	2	Ω
$R_{goff} =$	2	Ω

figure 29. FWD

Typical rate of fall of forward and reverse recovery current as a function of turn off gate resistor

$di_f/dt, di_{rr}/dt = f(R_{goff})$



With an inductive load at

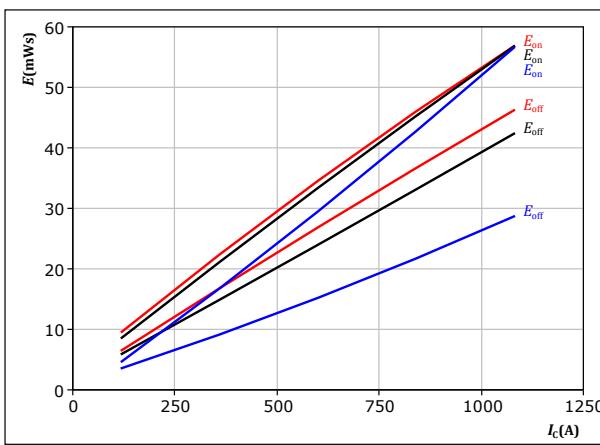
$V_{CE} =$	600	V	$T_j =$	25 °C
$V_{GE} =$	± 15	V		125 °C
$I_C =$	600	A		150 °C



AC 2 Switching Characteristics H

figure 31. IGBT

Typical switching energy losses as a function of collector current
 $E = f(I_c)$

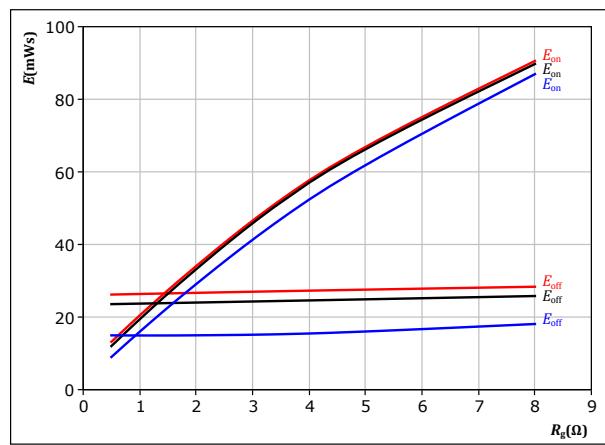


With an inductive load at

$V_{CE} = 600$ V $T_f:$ 25 °C
 $V_{GE} = \pm 15$ V 125 °C
 $R_{gon} = 2$ Ω 150 °C
 $R_{goff} = 2$ Ω

figure 32. IGBT

Typical switching energy losses as a function of gate resistor
 $E = f(R_g)$



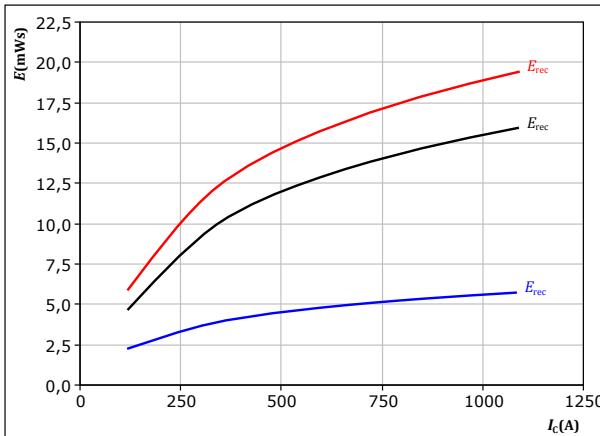
With an inductive load at

$V_{CE} = 600$ V $T_f:$ 25 °C
 $V_{GE} = \pm 15$ V 125 °C
 $I_c = 600$ A 150 °C

figure 33. FWD

Typical reverse recovered energy loss as a function of collector current

$E_{rec} = f(I_c)$



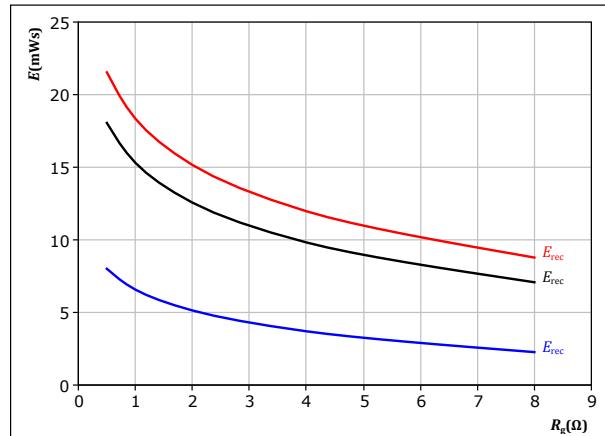
With an inductive load at

$V_{CE} = 600$ V $T_f:$ 25 °C
 $V_{GE} = \pm 15$ V 125 °C
 $R_{gon} = 2$ Ω 150 °C

figure 34. FWD

Typical reverse recovered energy loss as a function of gate resistor

$E_{rec} = f(R_g)$



With an inductive load at

$V_{CE} = 600$ V $T_f:$ 25 °C
 $V_{GE} = \pm 15$ V 125 °C
 $I_c = 600$ A 150 °C

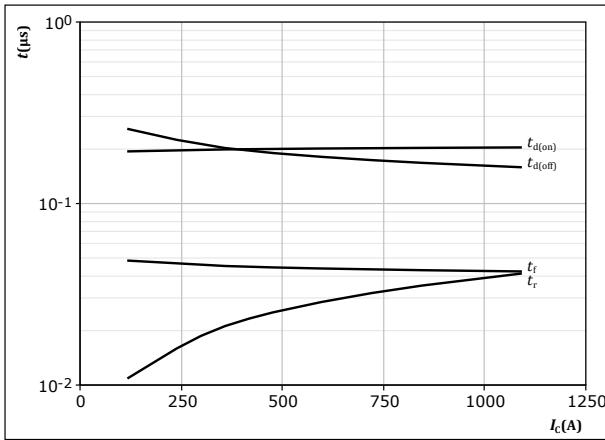


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AC 2 Switching Characteristics H

figure 35. IGBT

Typical switching times as a function of collector current
 $t = f(I_C)$

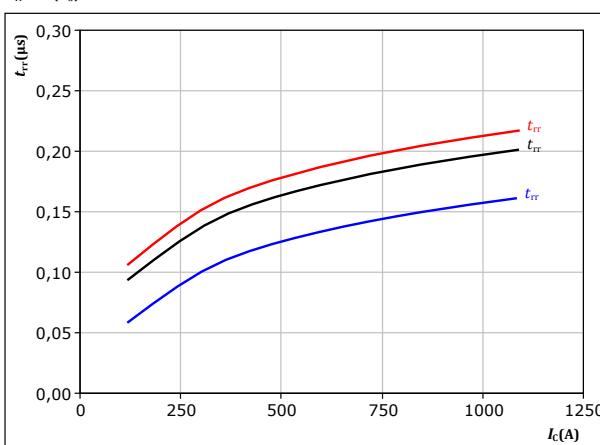


With an inductive load at

$T_j = 150^\circ\text{C}$
 $V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 2 \Omega$
 $R_{goff} = 2 \Omega$

figure 37. FWD

Typical reverse recovery time as a function of collector current
 $t_{rr} = f(I_C)$

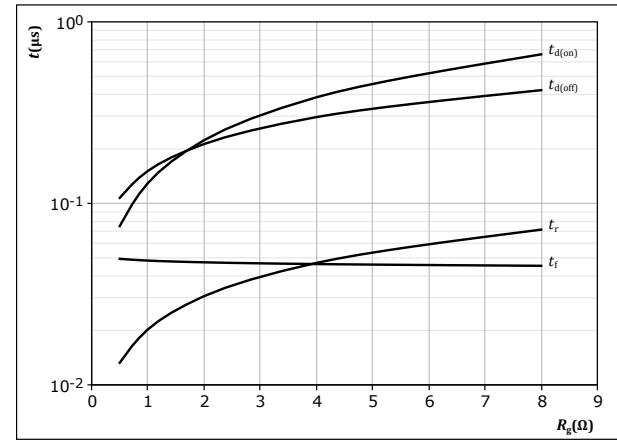


With an inductive load at

$V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $R_{gon} = 2 \Omega$

figure 36. IGBT

Typical switching times as a function of gate resistor
 $t = f(R_g)$

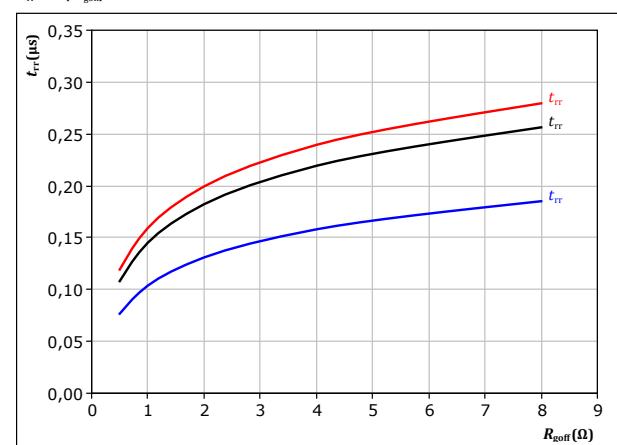


With an inductive load at

$T_j = 150^\circ\text{C}$
 $V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $I_C = 600 \text{ A}$

figure 38. FWD

Typical reverse recovery time as a function of IGBT turn off gate resistor
 $t_{rr} = f(R_{goff})$



With an inductive load at

$V_{CE} = 600 \text{ V}$
 $V_{GE} = \pm 15 \text{ V}$
 $I_C = 600 \text{ A}$



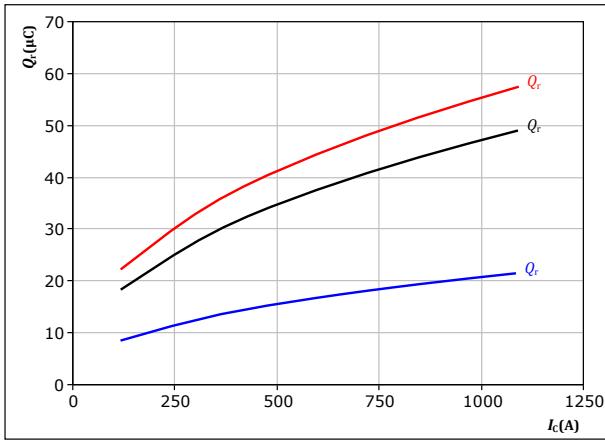
AC 2 Switching Characteristics H

figure 39.

FWD

Typical recovered charge as a function of collector current

$$Q_r = f(I_c)$$



With an inductive load at

$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ R_{gon} &= 2 \Omega \end{aligned}$$

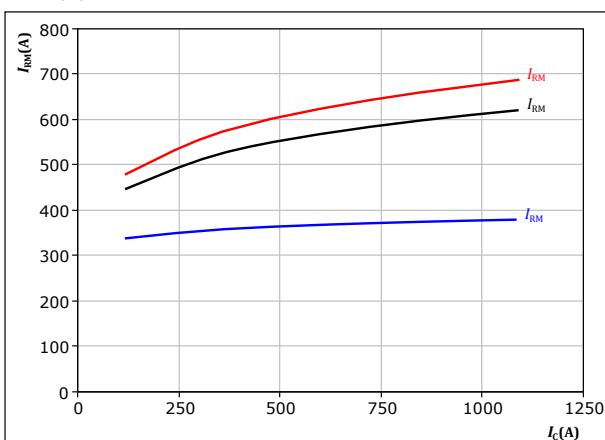
$$T_f: \quad \begin{array}{ll} \text{---} & 25 \text{ }^{\circ}\text{C} \\ \text{---} & 125 \text{ }^{\circ}\text{C} \\ \text{---} & 150 \text{ }^{\circ}\text{C} \end{array}$$

figure 41.

FWD

Typical peak reverse recovery current as a function of collector current

$$I_{RM} = f(I_c)$$



With an inductive load at

$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ R_{gon} &= 2 \Omega \end{aligned}$$

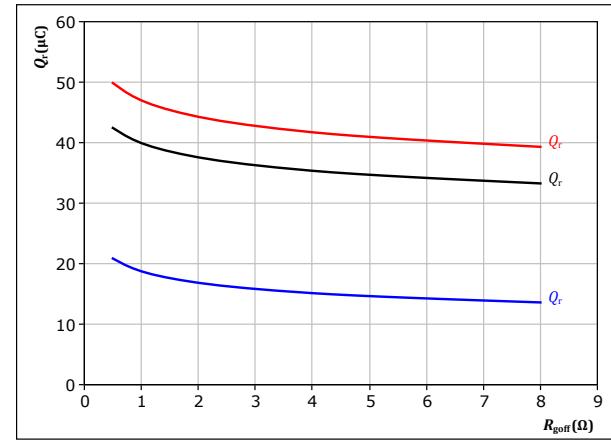
$$T_f: \quad \begin{array}{ll} \text{---} & 25 \text{ }^{\circ}\text{C} \\ \text{---} & 125 \text{ }^{\circ}\text{C} \\ \text{---} & 150 \text{ }^{\circ}\text{C} \end{array}$$

figure 40.

FWD

Typical recovered charge as a function of turn off gate resistor

$$Q_r = f(R_{go\bar{f}})$$



With an inductive load at

$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ I_c &= 600 \text{ A} \end{aligned}$$

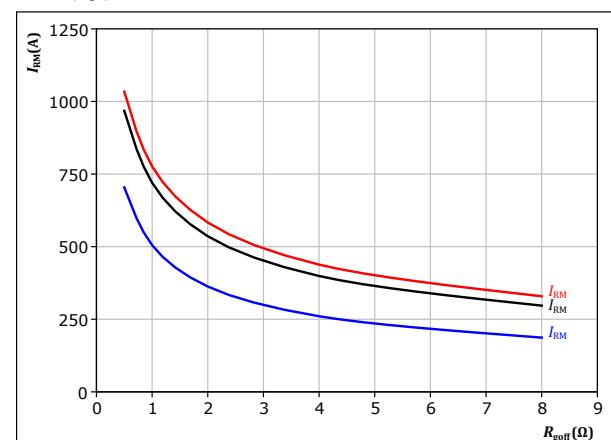
$$T_f: \quad \begin{array}{ll} \text{---} & 25 \text{ }^{\circ}\text{C} \\ \text{---} & 125 \text{ }^{\circ}\text{C} \\ \text{---} & 150 \text{ }^{\circ}\text{C} \end{array}$$

figure 42.

FWD

Typical peak reverse recovery current as a function of turn off gate resistor

$$I_{RM} = f(R_{go\bar{f}})$$



With an inductive load at

$$\begin{aligned} V_{CE} &= 600 \text{ V} \\ V_{GE} &= \pm 15 \text{ V} \\ I_c &= 600 \text{ A} \end{aligned}$$

$$T_f: \quad \begin{array}{ll} \text{---} & 25 \text{ }^{\circ}\text{C} \\ \text{---} & 125 \text{ }^{\circ}\text{C} \\ \text{---} & 150 \text{ }^{\circ}\text{C} \end{array}$$

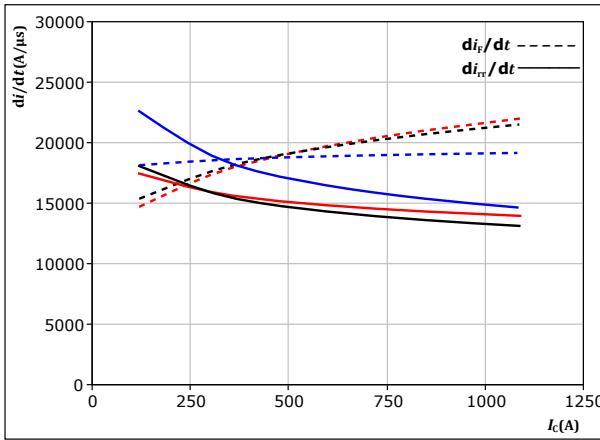


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AC 2 Switching Characteristics H

figure 43. FWD

Typical rate of fall of forward and reverse recovery current as a function of collector current
 $di_f/dt, di_{rr}/dt = f(I_c)$

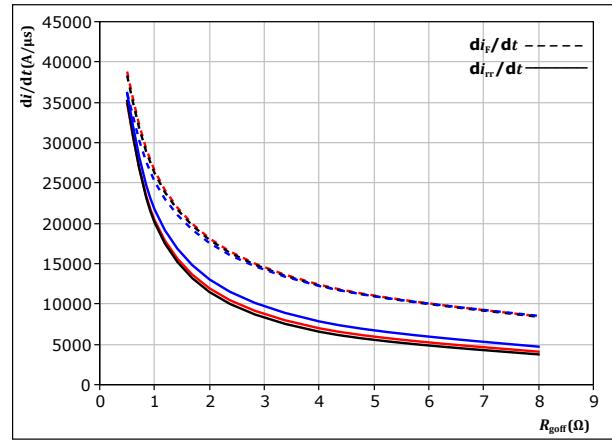


With an inductive load at

$V_{CE} = 600$ V $T_j = 25$ °C
 $V_{GE} = \pm 15$ V $T_j = 125$ °C
 $R_{gon} = 2$ Ω $T_j = 150$ °C

figure 44. FWD

Typical rate of fall of forward and reverse recovery current as a function of turn off gate resistor
 $di_f/dt, di_{rr}/dt = f(R_{goff})$



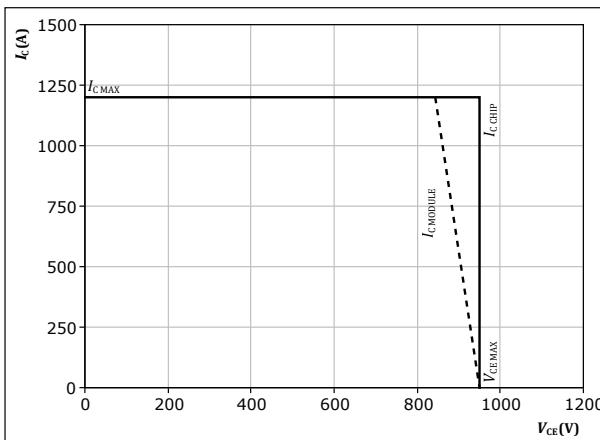
With an inductive load at

$V_{CE} = 600$ V $T_j = 25$ °C
 $V_{GE} = \pm 15$ V $T_j = 125$ °C
 $I_c = 600$ A $T_j = 150$ °C

figure 45. IGBT

Reverse bias safe operating area

$I_c = f(V_{CE})$



At $T_j = 150$ °C
 $R_{gon} = 2$ Ω
 $R_{goff} = 2$ Ω



Vincotech

Switching Definitions

figure 46. IGBT

Turn-off Switching Waveforms & definition of t_{doff} , t_{Eoff} (t_{Eoff} = integrating time for E_{off})

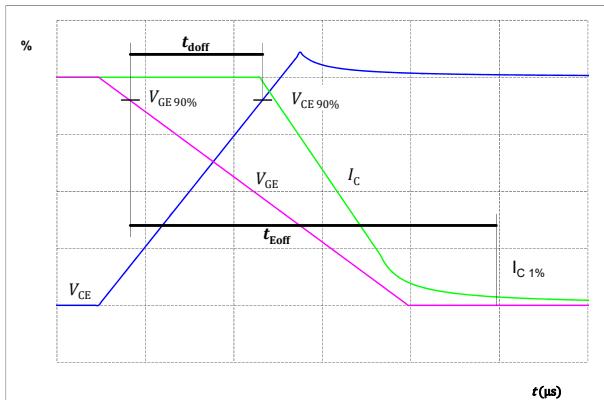


figure 48. IGBT

Turn-off Switching Waveforms & definition of t_f

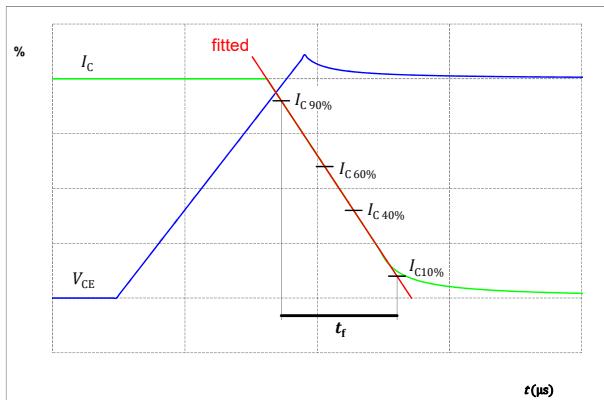


figure 47. IGBT

Turn-on Switching Waveforms & definition of t_{don} , t_{Eon} (t_{Eon} = integrating time for E_{on})

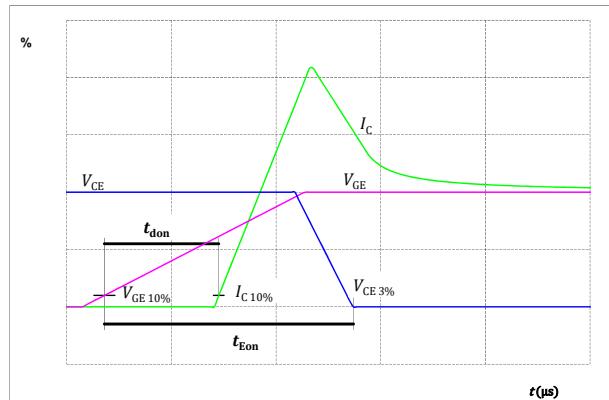
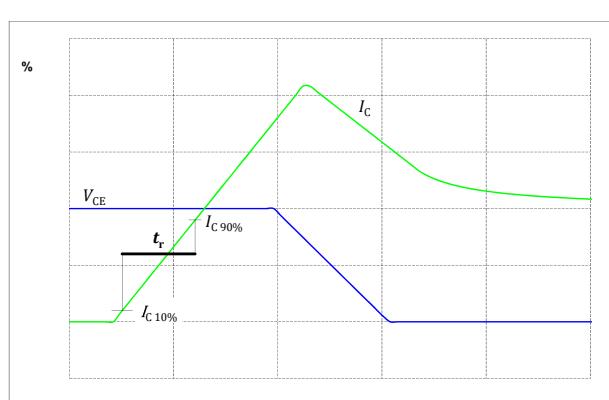


figure 49. IGBT

Turn-on Switching Waveforms & definition of t_r





Switching Definitions

figure 50.

Turn-off Switching Waveforms & definition of t_{tr}

FWD

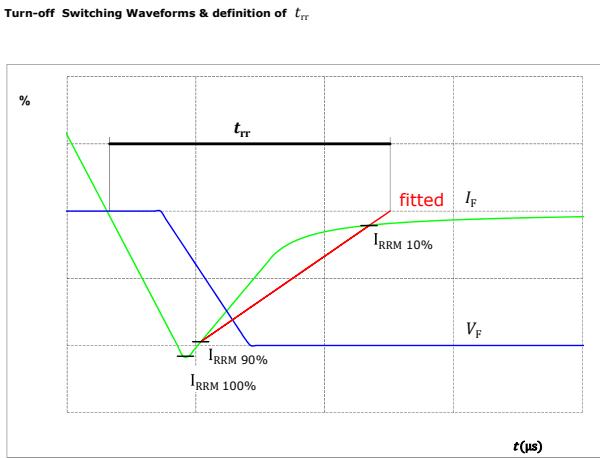
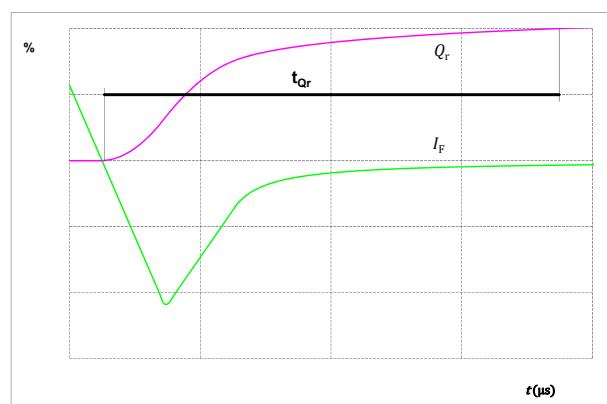


figure 51.

Turn-on Switching Waveforms & definition of t_{qr} (t_{qr} = integrating time for Q_r)

FWD



**B0-SP10FSA600S7-LM69F98T****B0-SP10FSB600S7-LM79F98T**

datasheet

Vincotech**Ordering Code**

Version	Ordering Code
With thermal paste (4,4 W/mK, PTM6000)	B0-SP10FSA600S7-LM69F98T-/7/

Marking

Text	Name	Date code	UL & VIN	Lot	Serial
	NN-NNNNNNNNNNNNNN TTTTTVVWWYY UL VIN LLLLL SSSS	WWYY	UL VIN	LLLLL	SSSS
Datamatrix	Type&Ver	Lot number	Serial	Date code	
	TTTTTVV	LLLLL	SSSS	WWYY	

B0-SP10FSA600S7-LM69F98T**Outline**

Pin table [mm]			
Pin	X	Y	Function
1	0	14,8	DC-
2	0	17,5	DC-
3	0	20,2	DC-
4	0	30,2	DC+
5	0	32,9	DC+
6	0	35,6	DC+
7	0	50,4	Therm1
8	3	50,4	Therm2
9	4,8	28,2	C+
10	7,5	28,2	C+
11	10,2	28,2	C+
12	12,9	28,2	C+
13	4,8	22,2	C-
14	7,5	22,2	C-
15	10,2	22,2	C-
16	12,9	22,2	C-
17	23,2	50,4	G11-a
18	26,2	50,4	S11
19	29,2	50,4	G11-b
20	26,2	32,9	DC+
21	26,2	30,2	DC+
22	26,2	20,2	DC-
23	26,2	17,5	DC-
24	23,2	0	G12-a
25	26,2	0	S12
26	29,2	0	G12-b
27	30,75	28,2	C+
28	42,2	28,2	C+
29	44,9	28,2	C+
30	47,6	28,2	C+
31	30,75	22,2	C-
32	42,2	22,2	C-
33	44,9	22,2	C-
34	47,6	22,2	C-
35	52,4	35,6	DC+
36	52,4	32,9	DC+
37	52,4	30,2	DC+
38	52,4	20,2	DC-
39	52,4	17,5	DC-
40	52,4	14,8	DC-

center of press-fit pin head
pin head type 'T', PCB plated through-hole Ø1mm +0.09 / -0.06
for further PCB design rules refer to the latest handling instruction

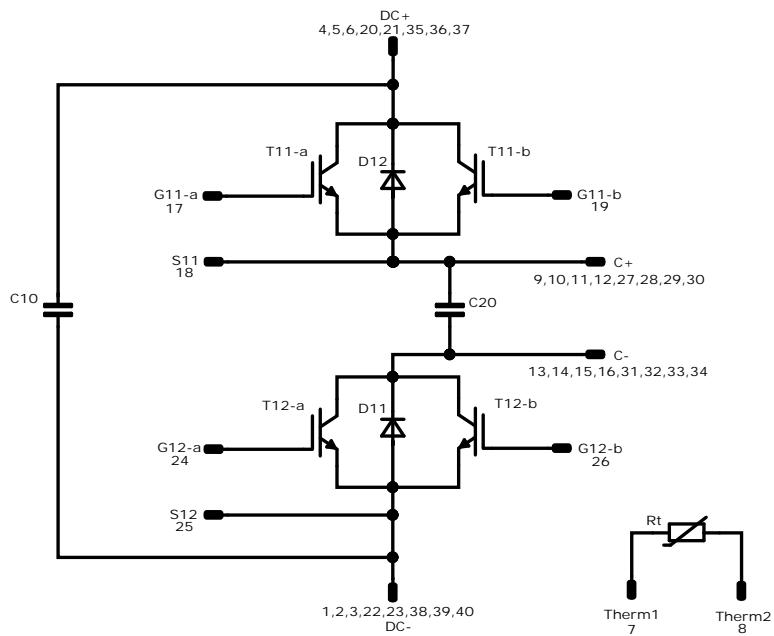
Tolerance of positions ±0.05mm at the end of pins
Dimension of coordinate axis is only offset without tolerance



Vincotech

B0-SP10FSA600S7-LM69F98T

Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T12	IGBT	950 V	600 A	AC 1 Switch L	Parallel devices with separate control. Values apply to complete device.
D11	FWD	950 V	600 A	AC 1 Diode L	
T11	IGBT	950 V	600 A	AC 1 Switch H	Parallel devices with separate control. Values apply to complete device.
D12	FWD	950 V	600 A	AC 1 Diode H	
C20	Capacitor	1000 V		Flying Capacitor	
C10	Capacitor	1500 V		Capacitor (DC)	
Rt	Thermistor			Thermistor	

**B0-SP10FSA600S7-LM69F98T****B0-SP10FSB600S7-LM79F98T**

datasheet

Vincotech**Ordering Code**

Version	Ordering Code
With thermal paste (4,4 W/mK, PTM6000)	B0-SP10FSB600S7-LM79F98T-/7/

Marking

Text	Name	Date code	UL & VIN	Lot	Serial
	NN-NNNNNNNNNNNNNN TTTTTVVWWYY UL VIN LLLL SSSS	WWYY	UL VIN	LLLLL	SSSS
Datamatrix	Type&Ver TTTTTVV	Lot number LLLLL	Serial SSSS	Date code WWYY	

B0-SP10FSB600S7-LM79F98T**Outline**

Pin table [mm]			
Pin	X	Y	Function
1	0	16,8	C-
2	0	19,5	C-
3	0	22,2	C-
4	0	28,2	C+
5	0	30,9	C+
6	0	33,6	C+
7	0	50,4	Therm1
8	3	50,4	Therm2
9	11,5	26,35	Ph
10	14,22	26,35	Ph
11	16,9	26,35	Ph
12	19,62	26,35	Ph
13	23,2	50,4	G13-a
14	26,2	50,4	S13
15	29,2	50,4	G13-b
16	26,2	31,9	C+
17	26,2	29,2	C+
18	26,2	21,2	C-
19	26,2	18,5	C-
20	23,2	0	G14-a
21	26,2	0	S14
22	29,2	0	G14-b
23	32,8	26,35	Ph
24	35,5	26,35	Ph
25	38,2	26,35	Ph
26	40,9	26,35	Ph
27	52,4	33,6	C+
28	52,4	30,9	C+
29	52,4	28,2	C+
30	52,4	22,2	C-
31	52,4	19,5	C-
32	52,4	16,8	C-

center of press-fit pin bed
pin head type: T; PCB pitched through-hole Ø1mm +0.09/-0.06
for further R&B design rules refer to the latest handling instruction

109.101 86.155

Y

221

362

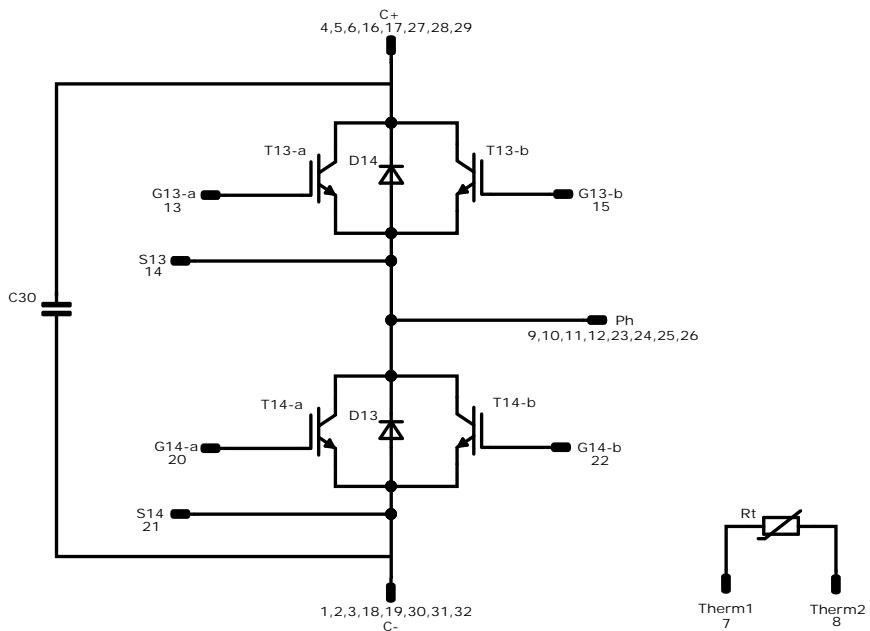
Tolerance of projections +0.0mm at the end of pins
Dimension of concrete area is a dry offset without tolerance



Vincotech

B0-SP10FSB600S7-LM79F98T

Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T14	IGBT	950 V	600 A	AC 2 Switch L	Parallel devices with separate control. Values apply to complete device.
D13	FWD	950 V	600 A	AC 2 Diode L	
T13	IGBT	950 V	600 A	AC 2 Switch H	Parallel devices with separate control. Values apply to complete device.
D14	FWD	950 V	600 A	AC 2 Diode H	
C30	Capacitor	1000 V		Flying Capacitor	
R _t	Thermistor			Thermistor	

**B0-SP10FSA600S7-LM69F98T****B0-SP10FSB600S7-LM79F98T**

datasheet

Vincotech**Packaging instruction**

Standard packaging quantity (SPQ) 45	>SPQ	Standard	<SPQ	Sample
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Handling instruction

Handling instructions for flow S3 packages see vincotech.com website.

Package data

Package data for flow S3 packages see vincotech.com website.

Vincotech thermistor reference

See Vincotech thermistor reference table at vincotech.com website.

UL recognition and file number

This device is certified according to UL 1557 standard, UL file number E192116. For more information see vincotech.com website.



Document No.:	Date:	Modification:	Pages
B0-SP10FSx600S7-LMx9F98T-D1-14	29 Jan. 2021		
B0-SP10FSx600S7-LMx9F98T-D2-14	9 Jul. 2021	Module marking is updated with UL logo, product is unchanged	

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2. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.