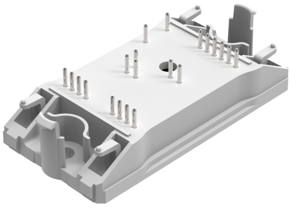
10-FZ122PB100SH-M819F28
datasheet

***flow*PHASE 0 + NTC** **1200 V / 100 A**

Features

- High efficiency fast IGBT4 HS half-bridge
- Full current FWD
- Thermistor

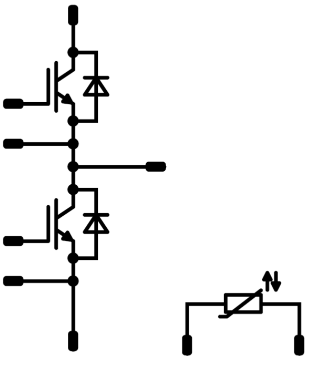
flow 0 12 mm housing



Target applications

- Industrial Drives
- Power Supply
- Solar
- UPS
- Welding & Cutting

Schematic



Types

- 10-FZ122PB100SH-M819F28

Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions		Value	Unit
Half-Bridge Switch - Hi side					
Collector-emitter voltage	V_{CES}			1200	V
Collector current (DC current)	I_C	$T_j = T_{jmax}$	T_s = 80 °C	87	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}		300	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	201	W
Gate-emitter voltage	V_{GES}			±20	V
Short circuit ratings	t_{SC}	V_{GE} = 15 V, V_{CC} = 800 V	T_j = 150 °C	10	µs
Maximum junction temperature	T_{jmax}			175	°C
Half-Bridge Switch - Lo side					
Collector-emitter voltage	V_{CES}			1200	V
Collector current (DC current)	I_C	$T_j = T_{jmax}$	T_s = 80 °C	87	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}		300	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	201	W
Gate-emitter voltage	V_{GES}			±20	V
Short circuit ratings	t_{SC}	V_{GE} = 15 V, V_{CC} = 800 V	T_j = 150 °C	10	µs
Maximum junction temperature	T_{jmax}			175	°C
Half-Bridge Diode - Hi side					
Peak repetitive reverse voltage	V_{RRM}			1200	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$	T_s = 80 °C	64	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, t_p = 10 ms	T_j = 150 °C	550	A
Surge current capability	I^2t			1513	A^2s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	122	W
Maximum junction temperature	T_{jmax}			175	°C

Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions		Value	Unit
Half-Bridge Diode - Lo side					
Peak repetitive reverse voltage	V_{RRM}			1200	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$	T_s = 80 °C	64	A
Surge (non-repetitive) forward current	I_{FSM}	Single Half Sine Wave, t_p = 10 ms	T_j = 150 °C	550	A
Surge current capability	I^2t			1513	A^2s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	122	W
Maximum junction temperature	T_{jmax}			175	°C
Module Properties					
Thermal Properties					
Storage temperature	T_{stg}			-40…+125	°C
Operation temperature under switching condition	T_{jop}			-40…+(T_{jmax} - 25)	°C
Isolation Properties					
Isolation voltage	V_{isol}	DC Test Voltage*	t_p = 2 s	6000	V
Isolation voltage	V_{isol}	AC Voltage	t_p = 1 min	2500	V
Creepage distance				>12,7	mm
Clearance				9,12	mm
Comparative Tracking Index	CTI			> 200	

*100 % tested in production

Characteristic Values

Parameter	Symbol	Conditions	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	Unit
Half-Bridge Switch - Hi side										
Static										
Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}$			0,0038	25	5,1	5,8	6,4	V
Collector-emitter saturation voltage	V_{CEsat}		15		100	25 150	1,78	1,95 2,39	2,42(1)	V
Collector-emitter cut-off current	I_{CES}		0	1200		25			1,3	µA
Gate-emitter leakage current	I_{GES}		20	0		25			120	nA
Internal gate resistance	r_g							7,5		Ω
Input capacitance	C_{ies}	f = 1 Mhz	0	25		25		6150		pF
Reverse transfer capacitance	C_{res}	f = 1 Mhz	0	25		25		345		pF
Gate charge	Q_g		15		0	25		800		nC
Thermal										
Thermal resistance junction to sink (2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						0,47		K/W
Dynamic										
Turn-on delay time	$t_{d(on)}$	R_{gon} = 1 Ω R_{goff} = 1 Ω	±15	600	100	25 125 150		129,2 143,2 145,2		ns
Rise time	t_r	R_{gon} = 1 Ω R_{goff} = 1 Ω	±15	600	100	25 125 150		27,6 30,4 33,8		ns
Turn-off delay time	$t_{d(off)}$	R_{gon} = 1 Ω R_{goff} = 1 Ω	±15	600	100	25 125 150		214,2 268,6 282		ns
Fall time	t_f	R_{gon} = 1 Ω R_{goff} = 1 Ω	±15	600	100	25 125 150		26,36 66,55 76,62		ns
Turn-on energy (per pulse)	E_{on}	Q_{rFWD}=6,66 µC Q_{rFWD}=13,25 µC Q_{rFWD}=16,16 µC	±15	600	100	25 125 150		4,85 7,4 8,5		mWs
Turn-off energy (per pulse)	E_{off}		±15	600	100	25 125 150		4,12 6,2 6,89		mWs

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	
Half-Bridge Switch - Lo side										
Static										
Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{CE} = V_{GE}$			0,0038	25	5,1	5,8	6,4	V
Collector-emitter saturation voltage	V_{CEsat}		15		100	25 150	1,78	1,95 2,39	2,42(1)	V
Collector-emitter cut-off current	I_{CES}		0	1200		25			1,3	µA
Gate-emitter leakage current	I_{GES}		20	0		25			120	nA
Internal gate resistance	r_g							7,5		Ω
Input capacitance	C_{ies}	f = 1 Mhz	0	25		25		6150		pF
Reverse transfer capacitance	C_{res}	f = 1 Mhz	0	25		25		345		pF
Gate charge	Q_g		15		0	25		800		nC
Thermal										
Thermal resistance junction to sink (2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						0,47		K/W
Dynamic										
Turn-on delay time	$t_{d(on)}$	R_{gon} = 1 Ω R_{goff} = 1 Ω	±15	600	100	25 125 150		129,2 143,2 145,2		ns
Rise time	t_r	R_{gon} = 1 Ω R_{goff} = 1 Ω	±15	600	100	25 125 150		27,6 30,4 33,8		ns
Turn-off delay time	$t_{d(off)}$	R_{gon} = 1 Ω R_{goff} = 1 Ω	±15	600	100	25 125 150		214,2 268,6 282		ns
Fall time	t_f	R_{gon} = 1 Ω R_{goff} = 1 Ω	±15	600	100	25 125 150		26,36 66,55 76,62		ns
Turn-on energy (per pulse)	E_{on}	Q_{rFWD}=6,66 µC Q_{rFWD}=13,25 µC Q_{rFWD}=16,16 µC	±15	600	100	25 125 150		4,85 7,4 8,5		mWs
Turn-off energy (per pulse)	E_{off}		±15	600	100	25 125 150		4,12 6,2 6,89		mWs

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	
Half-Bridge Diode - Hi side										
Static										
Forward voltage	V_F				100	25 125 150		2,3 2,38 2,31	2,52(1) 2,47(1)	V
Reverse leakage current	I_R	V_r = 1200 V				25 150		 8800	120 17700	µA
Thermal										
Thermal resistance junction to sink (2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						0,78		K/W
Dynamic										
Peak recovery current	I_{RRM}	d*i*/d*t*=3967 A/µs d*i*/d*t*=3671 A/µs d*i*/d*t*=3881 A/µs	±15	600	100	25 125 150		100,94 119,83 129,79		A
Reverse recovery time	t_{rr}					25 125 150		157,77 336,7 369,56		ns
Recovered charge	Q_r					25 125 150		6,66 13,25 16,16		µC
Reverse recovered energy	E_{rec}					25 125 150		2,52 5,3 6,44		mWs
Peak rate of fall of recovery current	$(di_{rf}/dt)_{max}$					25 125 150		4584 3088 2896		A/µs

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	
Half-Bridge Diode - Lo side										
Static										
Forward voltage	V_F				100	25 125 150		2,3 2,38 2,31	2,52(1) 2,47(1)	V
Reverse leakage current	I_R	V_r = 1200 V				25 150		 8800	120 17700	µA
Thermal										
Thermal resistance junction to sink (2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						0,78		K/W
Dynamic										
Peak recovery current	I_{RRM}	di/dt=3967 A/µs di/dt=3671 A/µs di/dt=3881 A/µs	±15	600	100	25 125 150		100,94 119,83 129,79		A
Reverse recovery time	t_{rr}					25 125 150		157,77 336,7 369,56		ns
Recovered charge	Q_r					25 125 150		6,66 13,25 16,16		µC
Reverse recovered energy	E_{rec}					25 125 150		2,52 5,3 6,44		mWs
Peak rate of fall of recovery current	$(di_{rf}/dt)_{max}$					25 125 150		4584 3088 2896		A/µs

Characteristic Values

Parameter	Symbol	Conditions	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	Unit
Thermistor										
Static										
Rated resistance	R					25		22		kΩ
Deviation of R_{100}	$\Delta_{R/R}$	R_{100} = 1484 Ω				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	

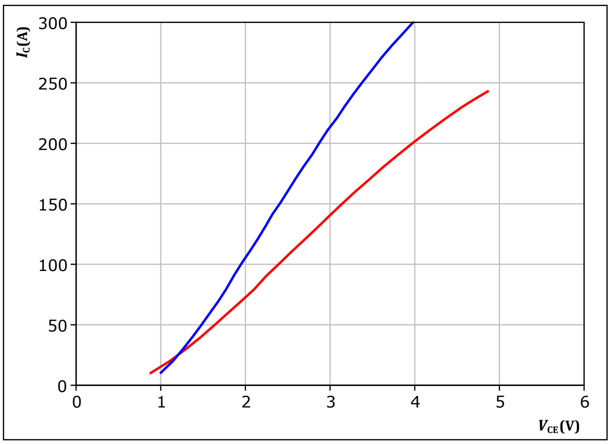
(1) Value at chip level
(2) Only valid with pre-applied Vincotech thermal interface material.

Half-Bridge Switch - Hi side Characteristics

figure 1. IGBT

Typical output characteristics

I_C = f(V_{CE})



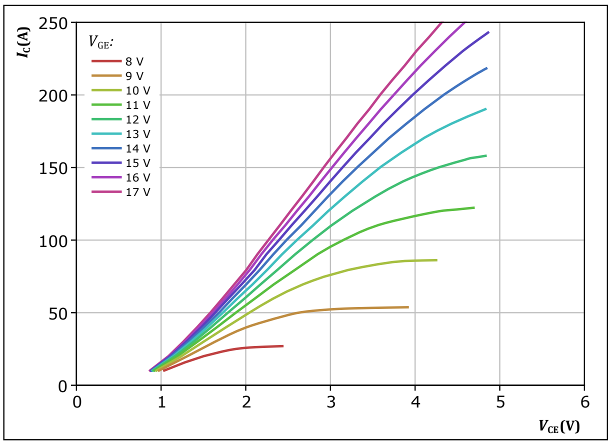
t_p = 250 µs
V_{GE} = 15 V

T_j: 25 °C, 150 °C

figure 2. IGBT

Typical output characteristics

I_C = f(V_{CE})

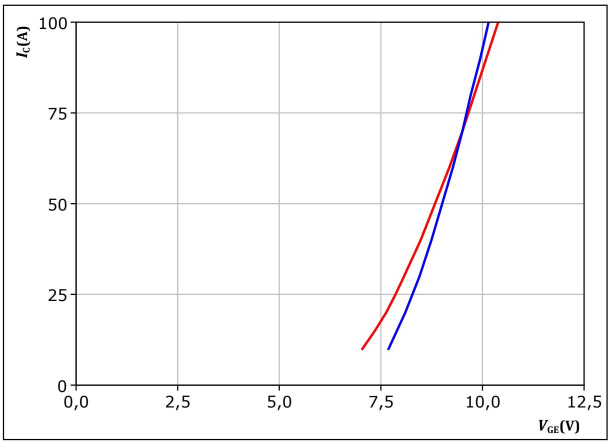


t_p = 250 µs
T_j = 150 °C
V_{GE} from 8 V to 17 V in steps of 1 V

figure 3. IGBT

Typical transfer characteristics

I_C = f(V_{GE})



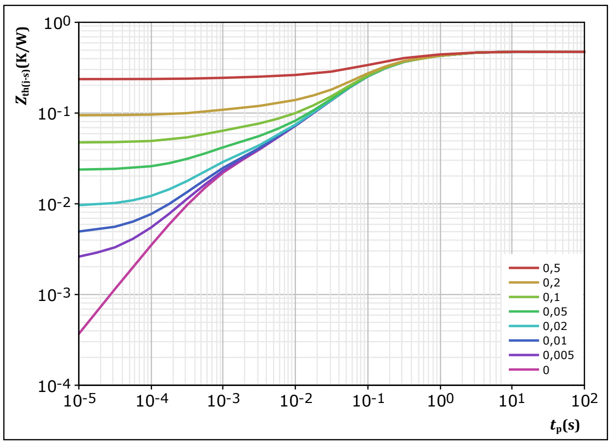
t_p = 250 µs
V_{CE} = 10 V

T_j: 25 °C, 150 °C

figure 4. IGBT

Transient thermal impedance as a function of pulse width

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



D = t_p / T
$R_{th(j-s)}$ = 0,473 K/W

IGBT thermal model values

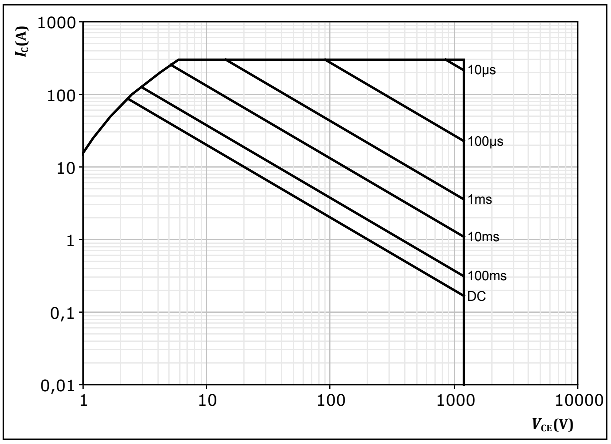
R (K/W)	τ (s)
8,95E-02	1,40E+00
1,91E-01	1,86E-01
1,52E-01	5,52E-02
2,19E-02	5,98E-03
1,89E-02	6,39E-04

Half-Bridge Switch - Hi side Characteristics

figure 5. **IGBT**

Safe operating area

$I_C = f(V_{CE})$



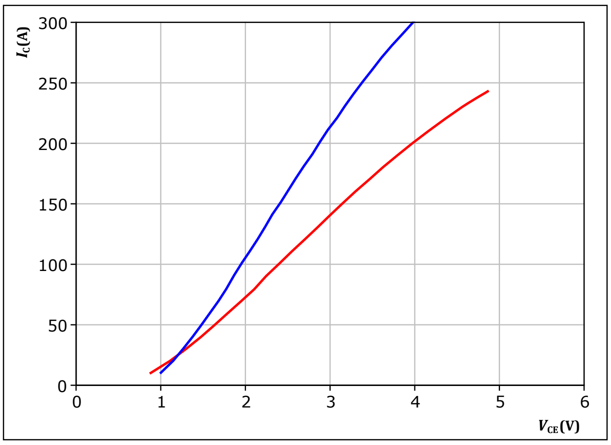
D =	single pulse	
T_s =	80	°C
V_{GE} =	15	V
T_j =	T_{jmax}	

Half-Bridge Switch - Lo side Characteristics

figure 6. **IGBT**

Typical output characteristics

$I_C = f(V_{CE})$

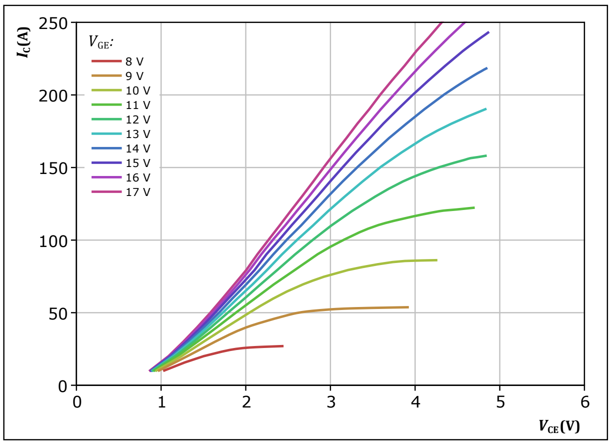


t_p =	250	µs	T_j:	25 °C
V_{GE} =	15	V		150 °C

figure 7. **IGBT**

Typical output characteristics

$I_C = f(V_{CE})$



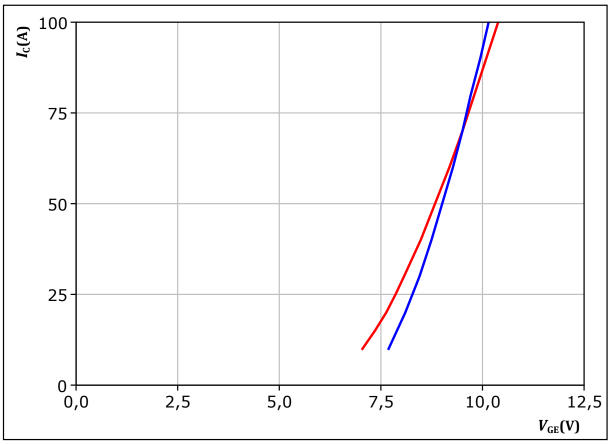
t_p =	250	µs
T_j =	150	°C

V_{GE} from 8 V to 17 V in steps of 1 V

figure 8. **IGBT**

Typical transfer characteristics

$I_C = f(V_{GE})$

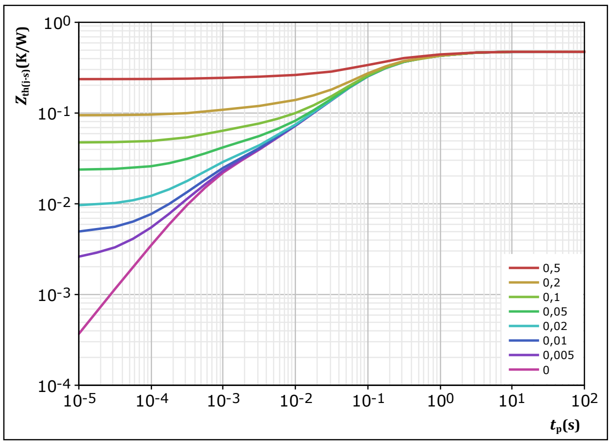


t_p =	250	µs	T_j:	25 °C
V_{CE} =	10	V		150 °C

figure 9. **IGBT**

Transient thermal impedance as a function of pulse width

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



D =	t_p / T	
$R_{th(j-s)}$ =	0,473	K/W

IGBT thermal model values

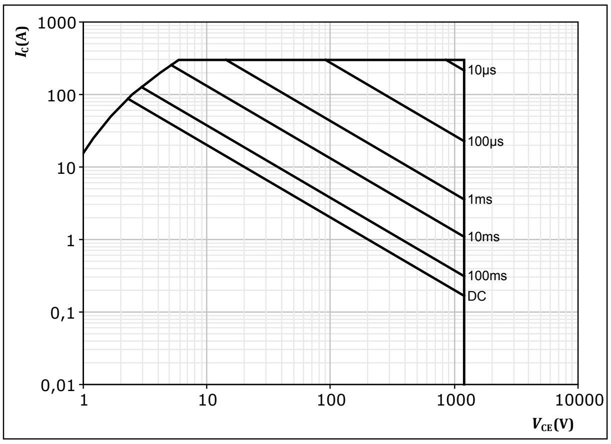
R (K/W)	τ (s)
8,95E-02	1,40E+00
1,91E-01	1,86E-01
1,52E-01	5,52E-02
2,19E-02	5,98E-03
1,89E-02	6,39E-04

Half-Bridge Switch - Lo side Characteristics

figure 10. **IGBT**

Safe operating area

I_C = f(V_{CE})



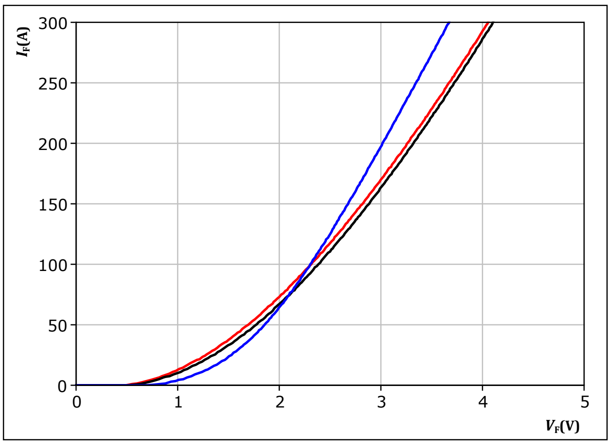
D =	single pulse	
T_s =	80	°C
V_{GE} =	15	V
T_j =	T_{jmax}	

Half-Bridge Diode - Hi side Characteristics

figure 11. **FWD**

Typical forward characteristics

I_F = f(V_F)



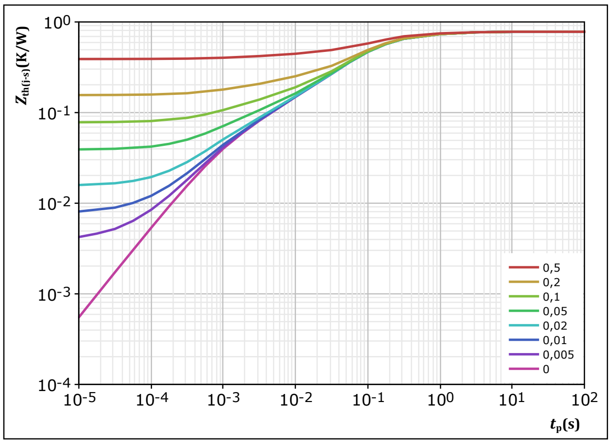
t_p = 250 µs

T_j: 25 °C, 125 °C, 150 °C

figure 12. **FWD**

Transient thermal impedance as a function of pulse width

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



D = t_p / T

$R_{th(j-s)}$ = 0,779 K/W

FWD thermal model values

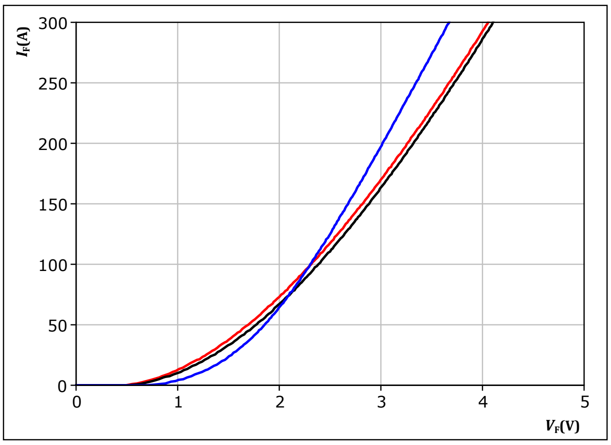
R (K/W)	τ (s)
7,81E-02	1,59E+00
1,93E-01	2,55E-01
3,99E-01	7,68E-02
7,07E-02	6,98E-03
3,88E-02	9,88E-04

Half-Bridge Diode - Lo side Characteristics

figure 13. FWD

Typical forward characteristics

I_F = f(V_F)



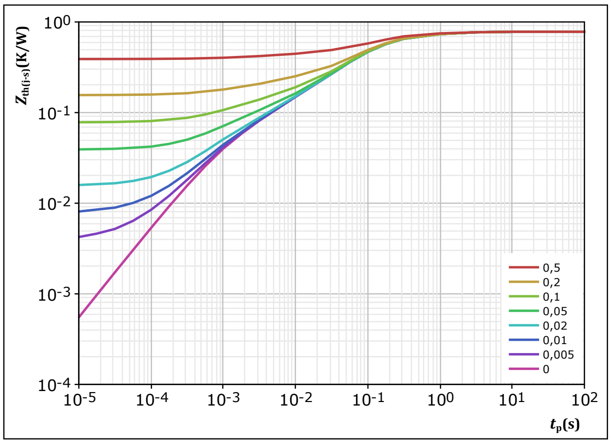
t_p = 250 µs

T_j: 25 °C, 125 °C, 150 °C

figure 14. FWD

Transient thermal impedance as a function of pulse width

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



D = t_p / T

$R_{th(j-s)}$ = 0,779 K/W

FWD thermal model values

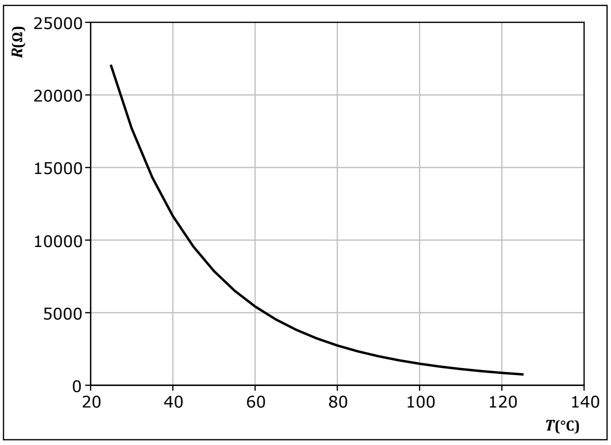
R (K/W)	τ (s)
7,81E-02	1,59E+00
1,93E-01	2,55E-01
3,99E-01	7,68E-02
7,07E-02	6,98E-03
3,88E-02	9,88E-04

Thermistor Characteristics

figure 15. **Thermistor**

Typical NTC characteristic as function of temperature

R_T = f(T)

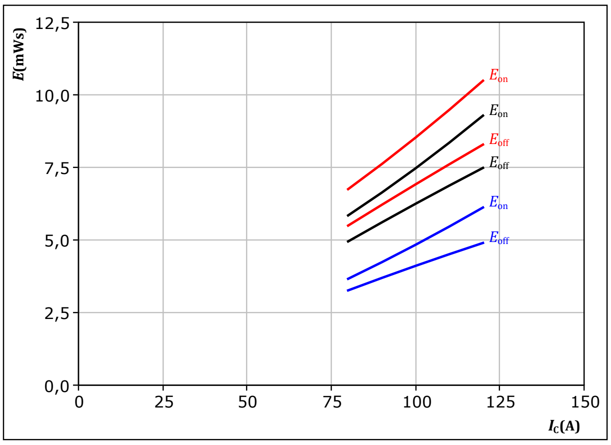


Half-Bridge Switching Characteristics - Hi side

figure 16. IGBT

Typical switching energy losses as a function of collector current

E = f(I_C)



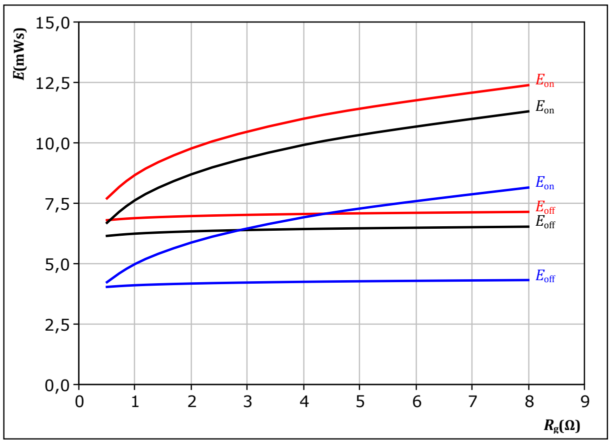
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
R_{gon} =	1	Ω		150 °C
R_{goff} =	1	Ω		

figure 17. IGBT

Typical switching energy losses as a function of gate resistor

E = f(R_g)



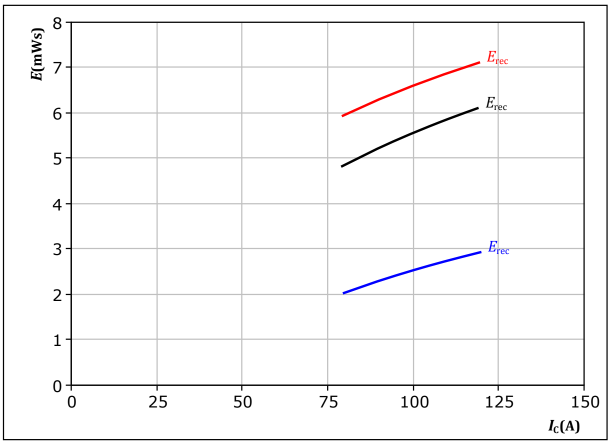
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
I_C =	100	A		150 °C

figure 18. FWD

Typical reverse recovered energy loss as a function of collector current

E_{rec} = f(I_C)



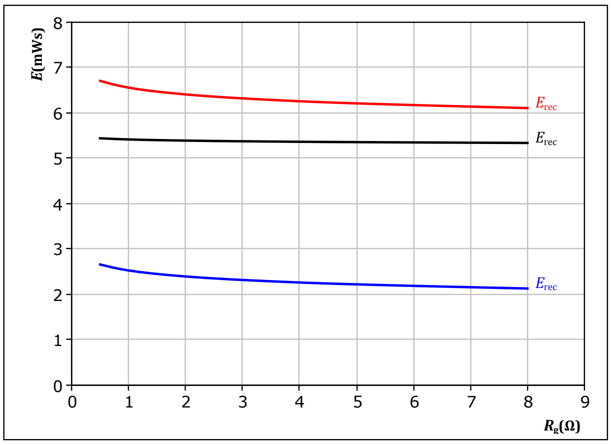
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
R_{gon} =	1	Ω		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

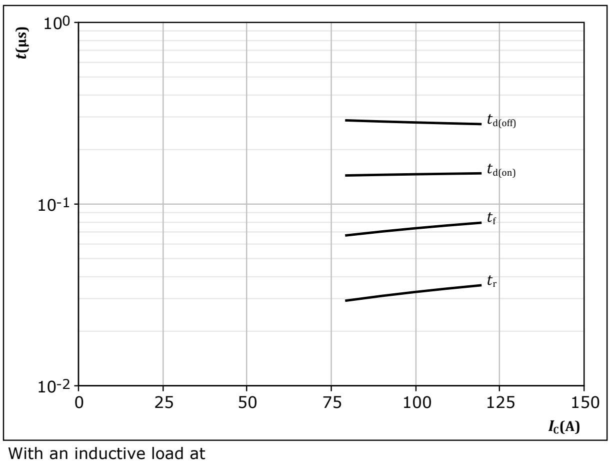
V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
I_C =	100	A		150 °C

Half-Bridge Switching Characteristics - Hi side

figure 20. **IGBT**

Typical switching times as a function of collector current

t = f(I_C)



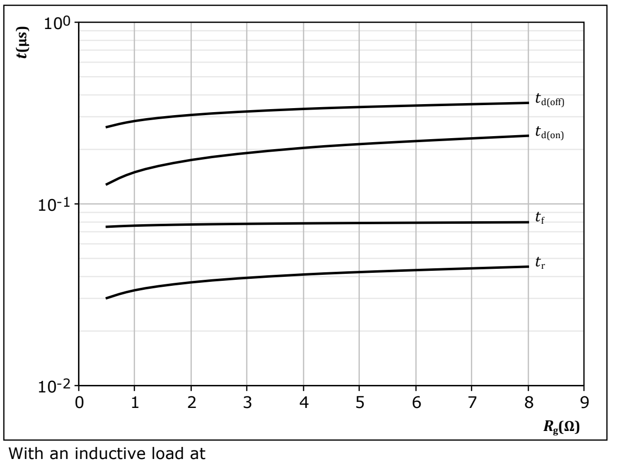
With an inductive load at

T_j =	150	°C
V_{CE} =	600	V
V_{GE} =	±15	V
R_{gon} =	1	Ω
R_{goff} =	1	Ω

figure 21. **IGBT**

Typical switching times as a function of gate resistor

t = f(R_g)



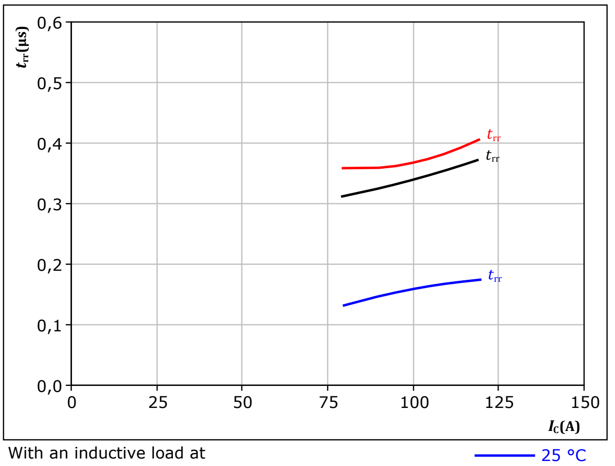
With an inductive load at

T_j =	150	°C
V_{CE} =	600	V
V_{GE} =	±15	V
I_C =	100	A

figure 22. **FWD**

Typical reverse recovery time as a function of collector current

t_{rr} = f(I_C)



With an inductive load at

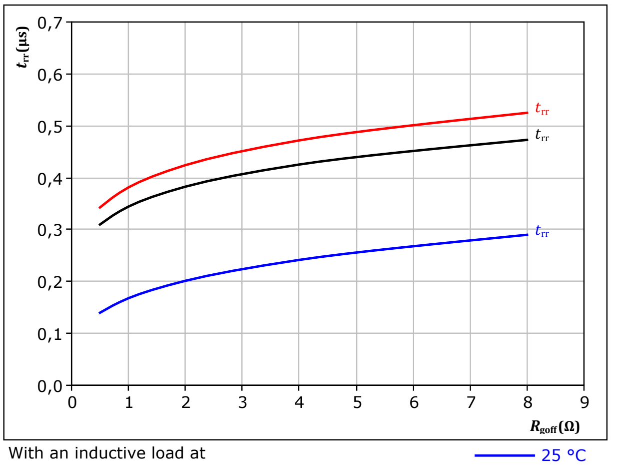
V_{CE} =	600	V
V_{GE} =	±15	V
R_{gon} =	1	Ω

T_j: 25 °C, 125 °C, 150 °C

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	V
V_{GE} =	±15	V
I_C =	100	A

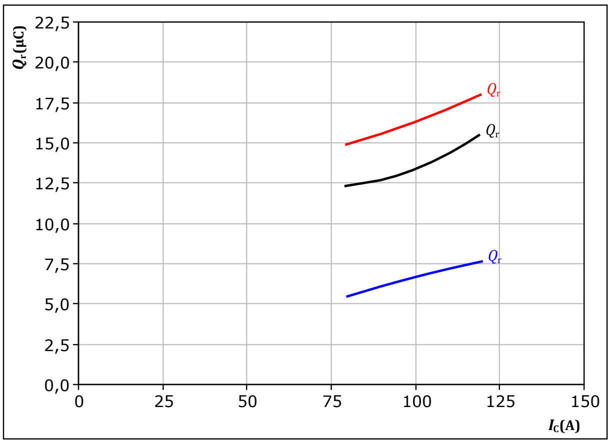
T_j: 25 °C, 125 °C, 150 °C

Half-Bridge Switching Characteristics - Hi side

figure 24. FWD

Typical recovered charge as a function of collector current

Q_r = f(I_C)



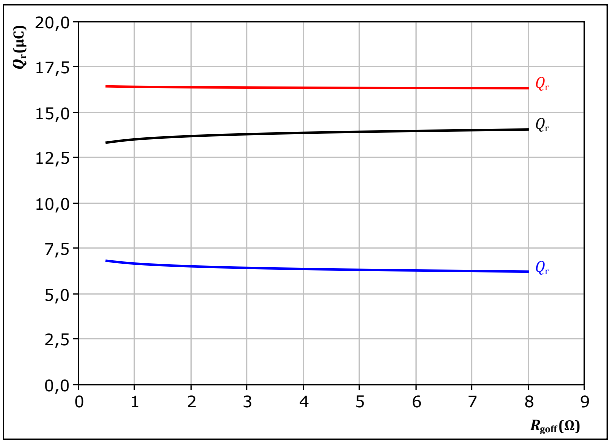
With an inductive load at

V_{CE} =	600	V	T_j: 25 °C / 125 °C / 150 °C
V_{GE} =	±15	V	
R_{gon} =	1	Ω	

figure 25. FWD

Typical recovered charge as a function of turn off gate resistor

Q_r = f(R_{goff})



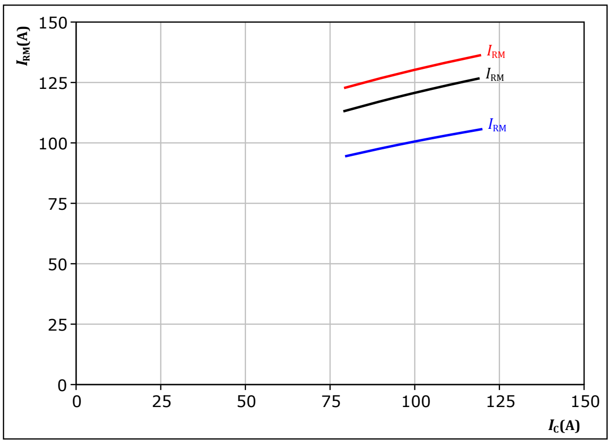
With an inductive load at

V_{CE} =	600	V	T_j: 25 °C / 125 °C / 150 °C
V_{GE} =	±15	V	
I_C =	100	A	

figure 26. FWD

Typical peak reverse recovery current as a function of collector current

I_{RM} = f(I_C)



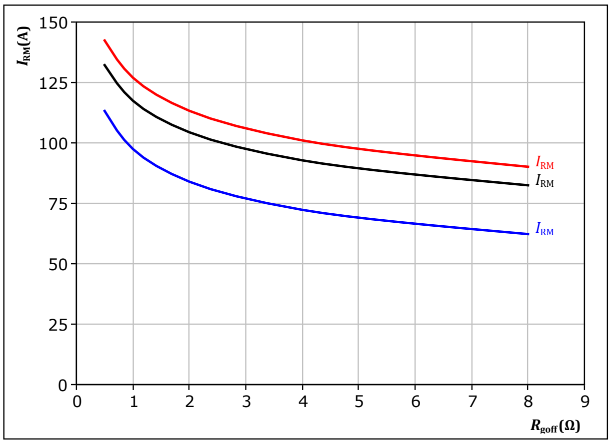
With an inductive load at

V_{CE} =	600	V	T_j: 25 °C / 125 °C / 150 °C
V_{GE} =	±15	V	
R_{gon} =	1	Ω	

figure 27. FWD

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

I_{RM} = f(R_{goff})



With an inductive load at

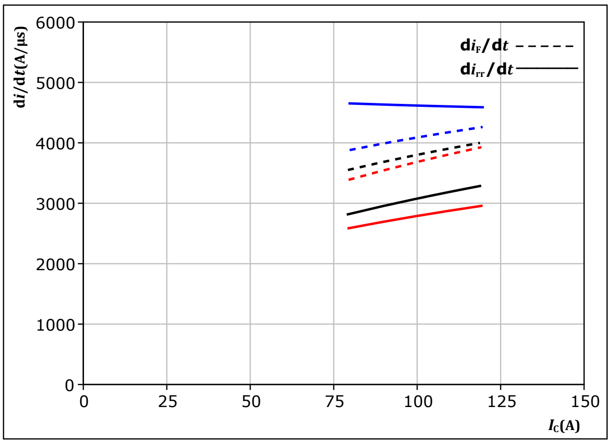
V_{CE} =	600	V	T_j: 25 °C / 125 °C / 150 °C
V_{GE} =	±15	V	
I_C =	100	A	

Half-Bridge Switching Characteristics - Hi side

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)



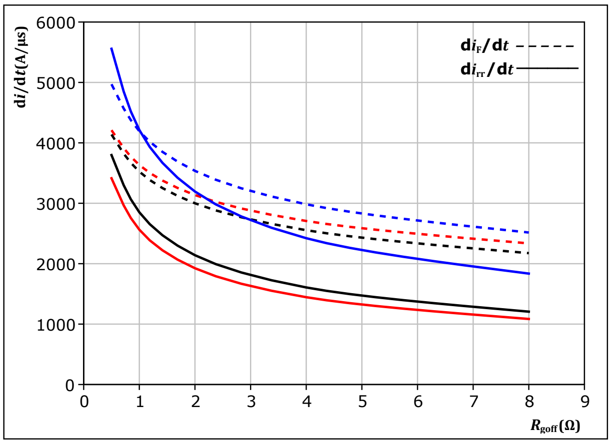
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
R_{gon} =	1	Ω		150 °C

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})



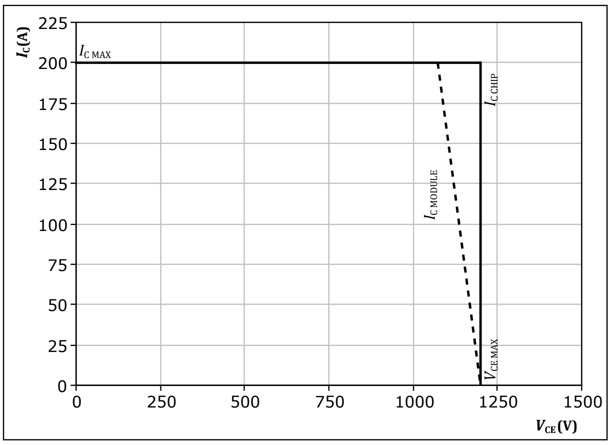
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
I_C =	100	A		150 °C

figure 30. **IGBT**

Reverse bias safe operating area

I_C = f(V_{CE})



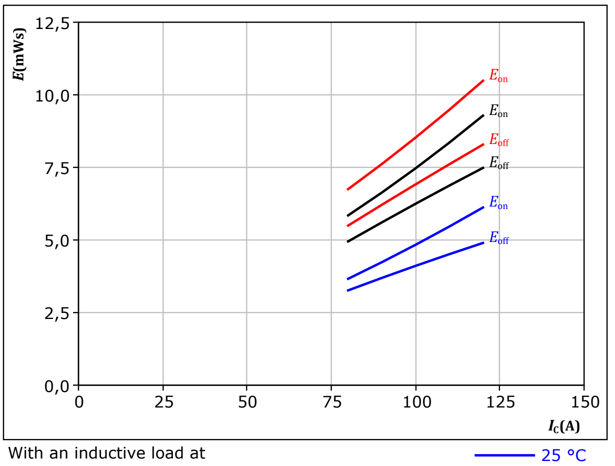
At	T_j =	150	°C
	R_{gon} =	1	Ω
	R_{goff} =	1	Ω

Half-Bridge Switching Characteristics - Lo side

figure 31. **IGBT**

Typical switching energy losses as a function of collector current

$E = f(I_C)$



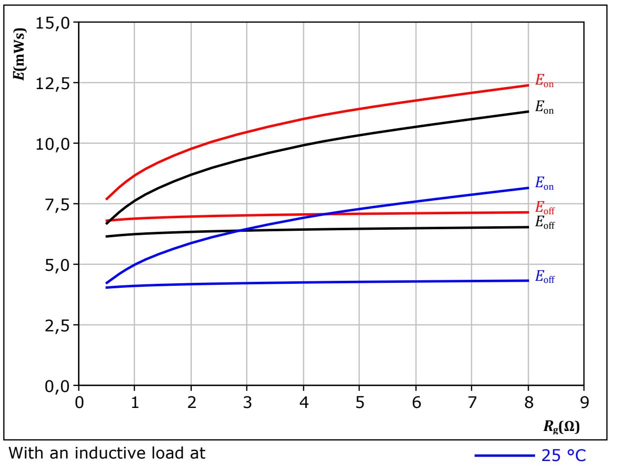
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
R_{gon} =	1	Ω		150 °C
R_{goff} =	1	Ω		

figure 32. **IGBT**

Typical switching energy losses as a function of gate resistor

$E = f(R_g)$



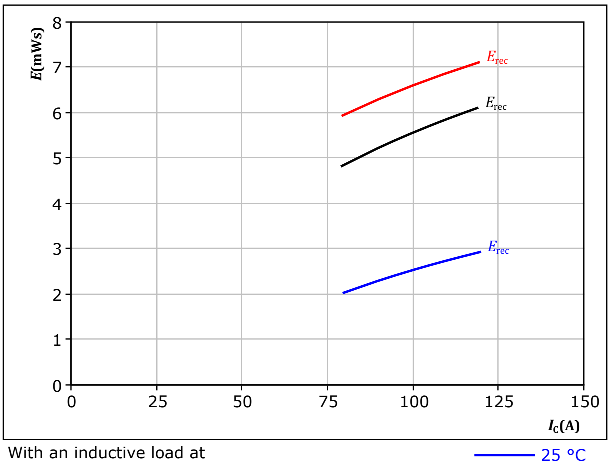
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
I_C =	100	A		150 °C

figure 33. **FWD**

Typical reverse recovered energy loss as a function of collector current

$E_{rec} = f(I_C)$



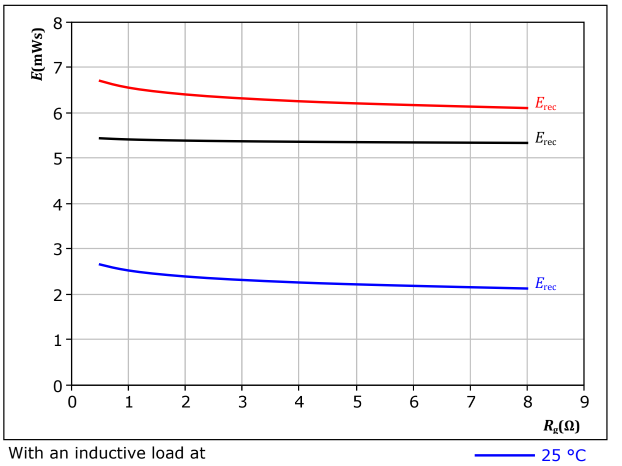
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
R_{gon} =	1	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

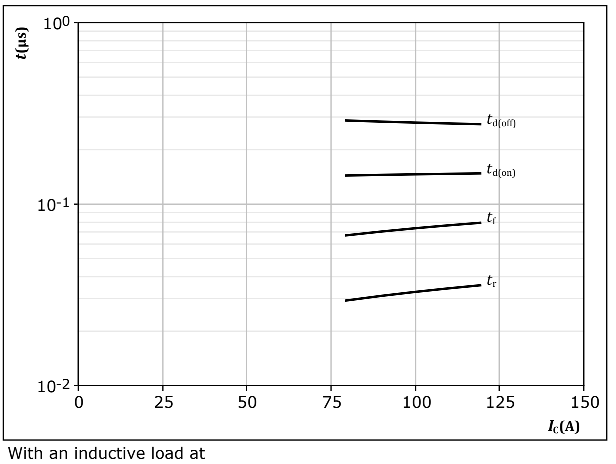
V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
I_C =	100	A		150 °C

Half-Bridge Switching Characteristics - Lo side

figure 35. IGBT

Typical switching times as a function of collector current

$t = f(I_C)$



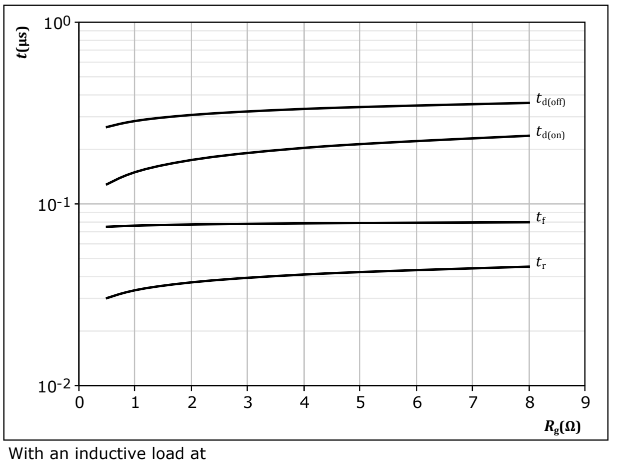
With an inductive load at

T_j =	150	°C
V_{CE} =	600	V
V_{GE} =	±15	V
R_{gon} =	1	Ω
R_{goff} =	1	Ω

figure 36. IGBT

Typical switching times as a function of gate resistor

$t = f(R_g)$



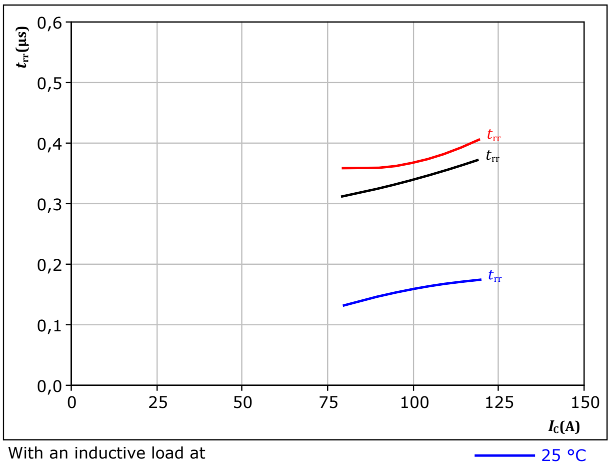
With an inductive load at

T_j =	150	°C
V_{CE} =	600	V
V_{GE} =	±15	V
I_C =	100	A

figure 37. FWD

Typical reverse recovery time as a function of collector current

$t_{rr} = f(I_C)$



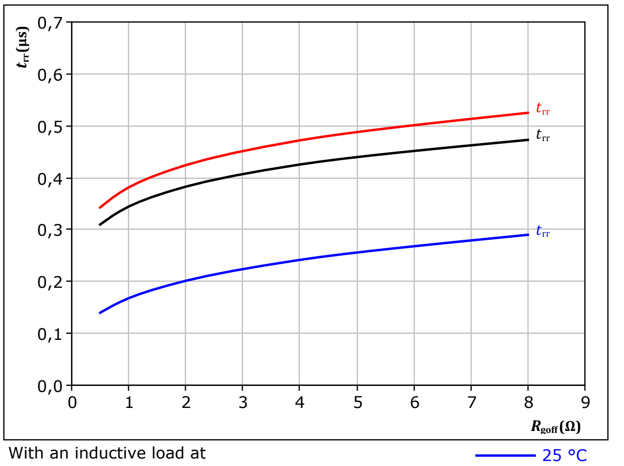
With an inductive load at

V_{CE} =	600	V
V_{GE} =	±15	V
R_{gon} =	1	Ω

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

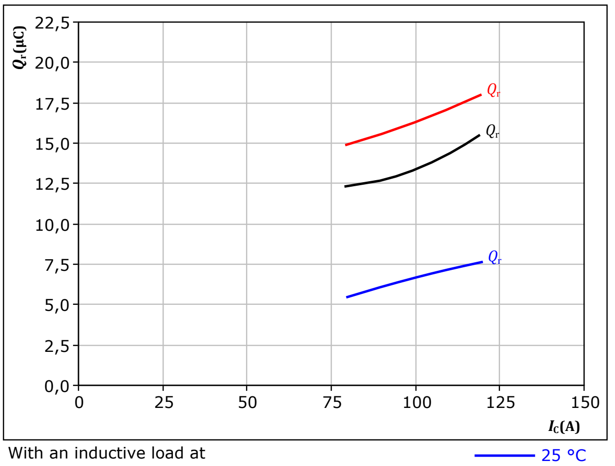
V_{CE} =	600	V
V_{GE} =	±15	V
I_C =	100	A

Half-Bridge Switching Characteristics - Lo side

figure 39. FWD

Typical recovered charge as a function of collector current

Q_r = f(I_C)



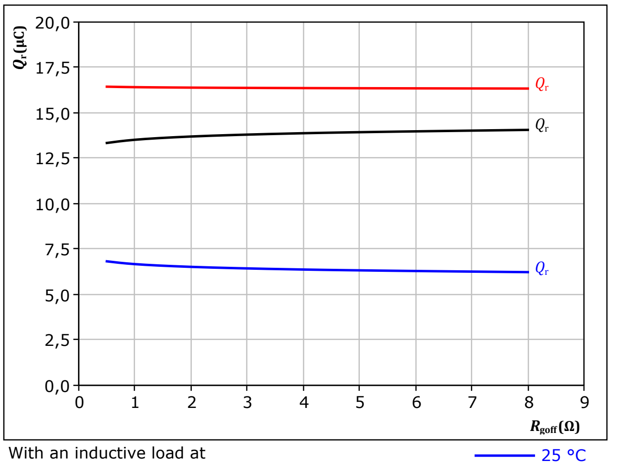
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
R_{gon} =	1	Ω		150 °C

figure 40. FWD

Typical recovered charge as a function of turn off gate resistor

Q_r = f(R_{goff})



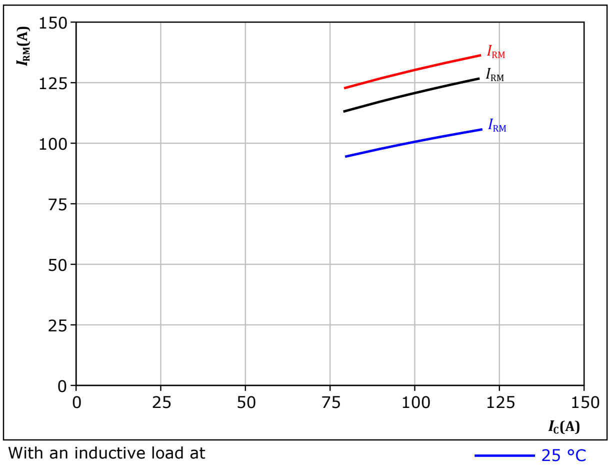
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
I_C =	100	A		150 °C

figure 41. FWD

Typical peak reverse recovery current as a function of collector current

I_{RM} = f(I_C)



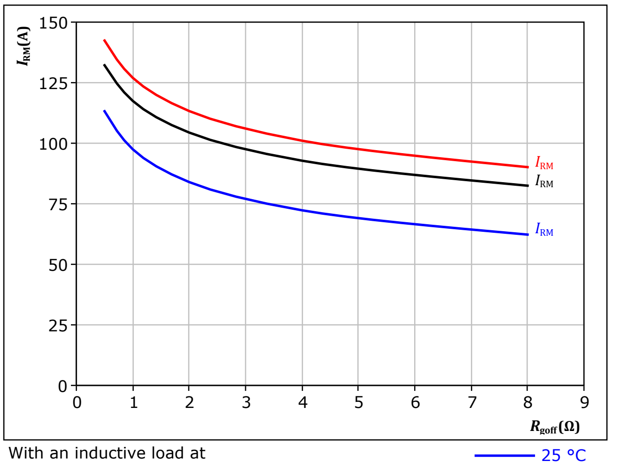
With an inductive load at

V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
R_{gon} =	1	Ω		150 °C

figure 42. FWD

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

I_{RM} = f(R_{goff})



With an inductive load at

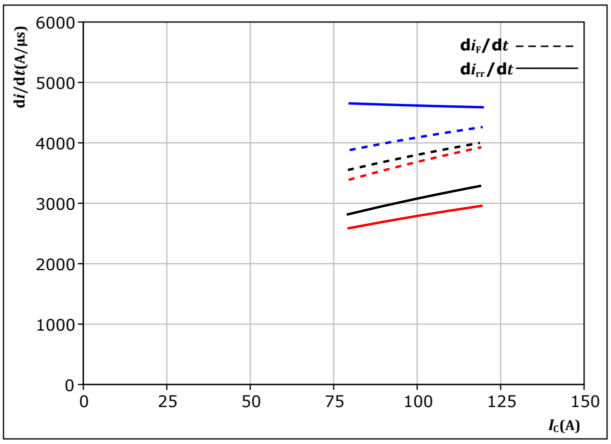
V_{CE} =	600	V	T_j:	25 °C
V_{GE} =	±15	V		125 °C
I_C =	100	A		150 °C

Half-Bridge Switching Characteristics - Lo side

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

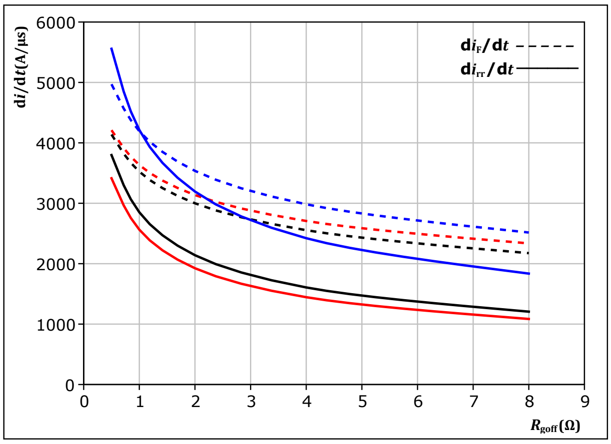
V_{CE} =	600	V	
V_{GE} =	±15	V	
R_{gon} =	1	Ω	

T_j: 25 °C, 125 °C, 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

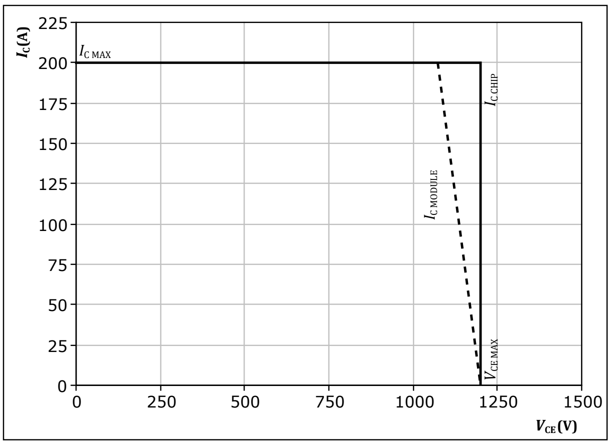
V_{CE} =	600	V	
V_{GE} =	±15	V	
I_C =	100	A	

T_j: 25 °C, 125 °C, 150 °C

figure 45. **IGBT**

Reverse bias safe operating area

I_C = f(V_{CE})



At			
	T_j =	150	°C
	R_{gon} =	1	Ω
	R_{goff} =	1	Ω

Switching Definitions

figure 46. **IGBT**

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

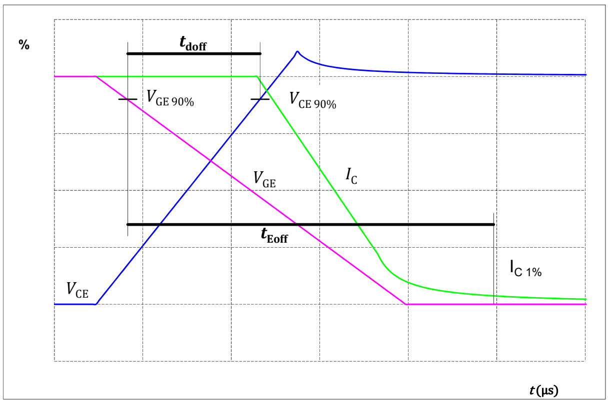


figure 47. **IGBT**

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

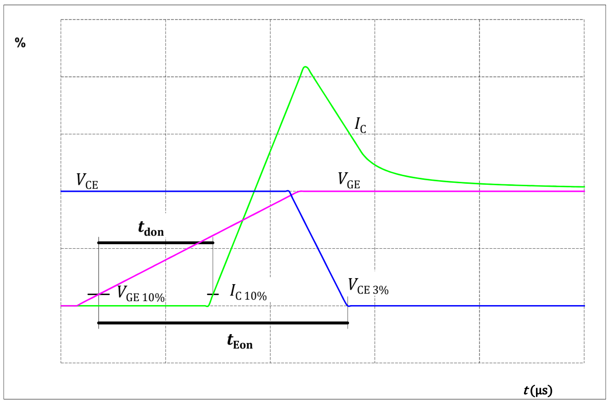


figure 48. **IGBT**

Turn-off Switching Waveforms & definition of t_f

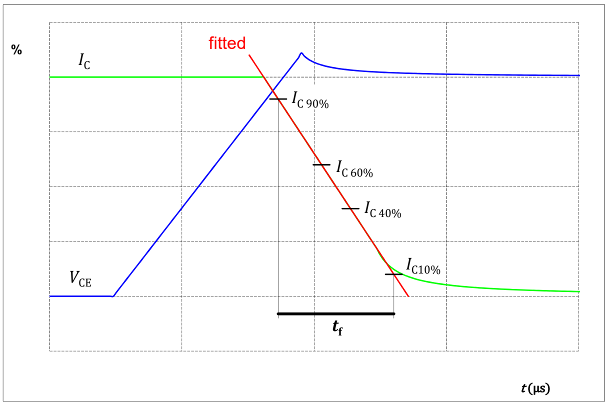
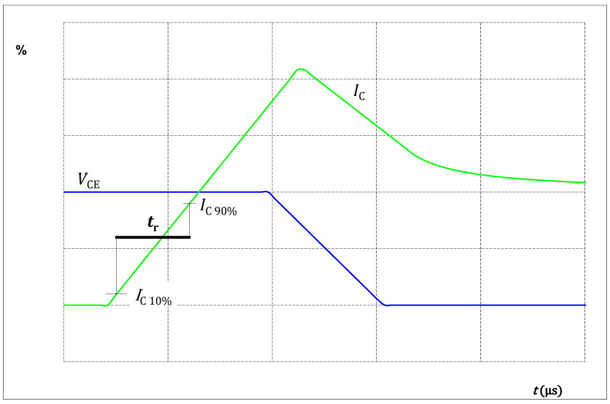


figure 49. **IGBT**

Turn-on Switching Waveforms & definition of t_r



Switching Definitions

figure 50. **FWD**

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

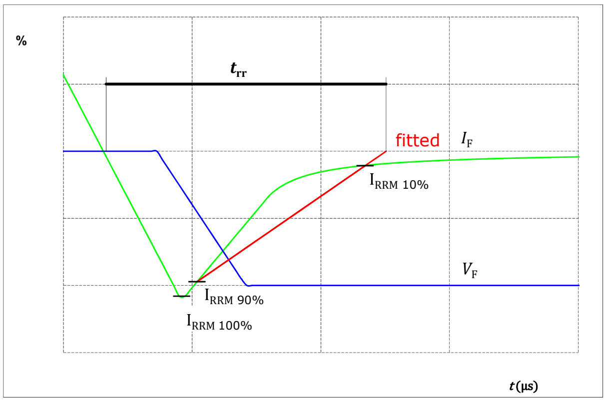
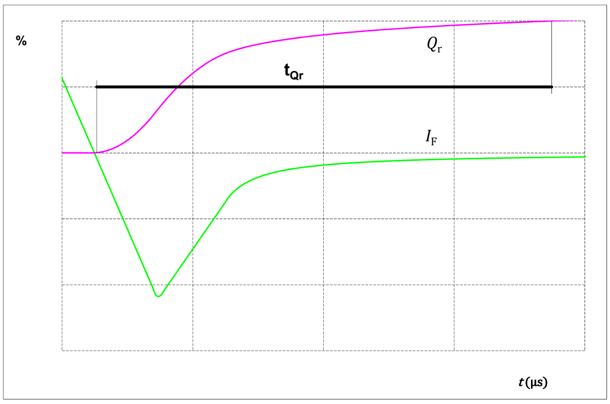


figure 51. **FWD**

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



10-FZ122PB100SH-M819F28
datasheet

Vincotech

Ordering Code

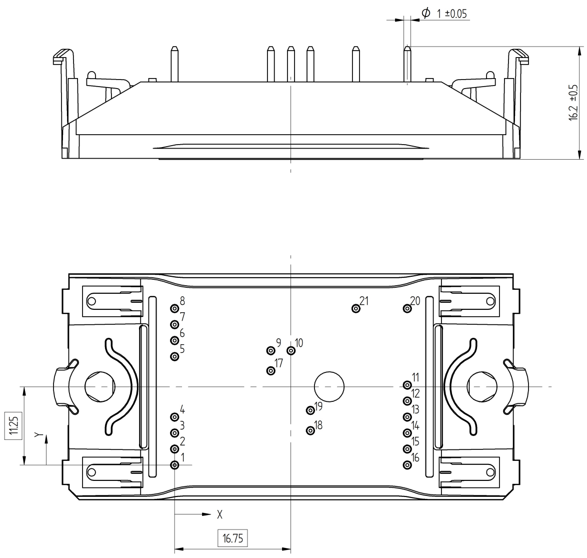
Version	Ordering Code
Without thermal paste	10-FZ122PB100SH-M819F28
With thermal paste (5,2 W/mK, PTM6000HV)	10-FZ122PB100SH-M819F28-/7/
With thermal paste (3,4 W/mK, PSX-P7)	10-FZ122PB100SH-M819F28-/3/

Marking

	**Text**	**Name**		**Date code**	**UL & VIN**	**Lot**	**Serial**
		NN-NNNNNNNNNNNNNNN-TTTTTTVV		WWYY	UL VIN	LLLLL	SSSS
	Datamatrix	**Type&Ver**	**Lot number**	**Serial**	**Date code**		
		TTTTTTTVV	LLLLL	SSSS	WWYY		

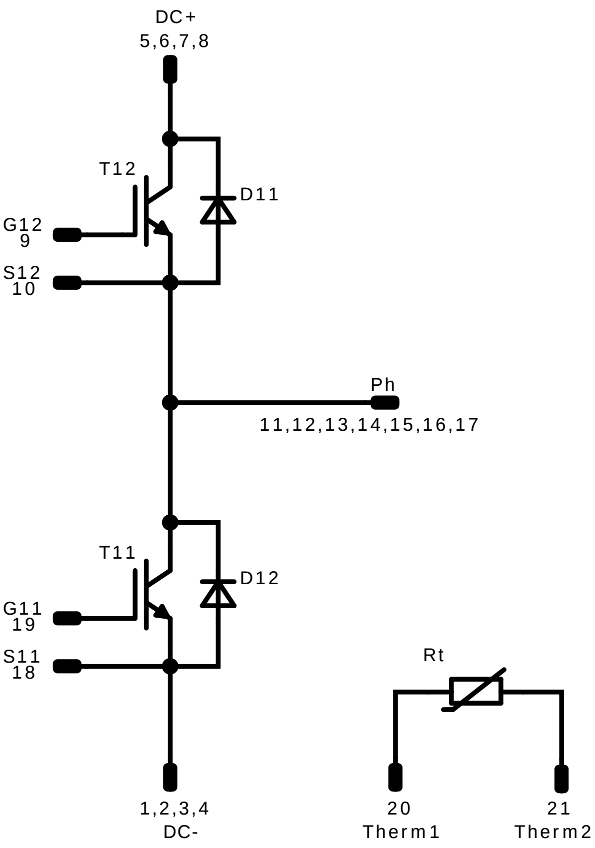
Outline

Pin table [mm]			
Pin	X	Y	Function
1	0	0	DC-
2	0	2,3	DC-
3	0	4,6	DC-
4	0	6,9	DC-
5	0	15,6	DC+
6	0	17,9	DC+
7	0	20,2	DC+
8	0	22,5	DC+
9	13,85	16,45	G12
10	16,75	16,45	S12
11	33,5	11,5	Ph
12	33,5	9,2	Ph
13	33,5	6,9	Ph
14	33,5	4,6	Ph
15	33,5	2,3	Ph
16	33,5	0	Ph
17	13,85	13,55	Ph
18	19,55	4,95	S11
19	19,55	7,85	G11
20	33,5	22,5	Therm1
21	26,1	22,5	Therm2



Tolerance of pinpositions: ±0,5mm at the end of pins
Dimension of coordinate axis is only offset without tolerance

Pinout



Identification

ID	Component	Voltage	Current	Function	Comment
T11-a	IGBT	1200 V	100 A	Half-Bridge Switch - Lo side	
T12-a	IGBT	1200 V	100 A	Half-Bridge Switch - Hi side	
D11-a	FWD	1200 V	100 A	Half-Bridge Diode - Hi side	
D12-a	FWD	1200 V	100 A	Half-Bridge Diode - Lo side	
Rt	NTC			Thermistor	

Packaging instruction				
Standard packaging quantity (SPQ) 135	>SPQ	Standard	<SPQ	Sample

Handling instruction
Handling instructions for *flow* 0 packages see vincotech.com website.

Package data
Package data for *flow* 0 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**
10-FZ122PB100SH-M819F28-D2-14	7 Sep. 2021	Diode static characteristics corrected New datasheet format, module is unchanged	