10-FY07HVA050RG01-L984F48

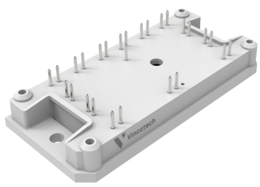
datasheet

*flow*PACK 1 H6.5 — 650 V / 50 A

Features

- Innovative H6.5 topology
- Optimized for bidirectional operation
- Integrated temperature sensor
- Low inductance housing

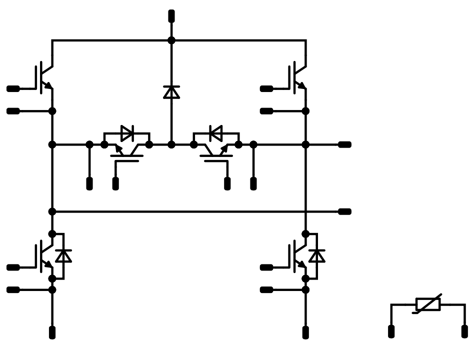
flow 1 12 mm housing



Target applications

- Energy Storage Systems

Schematic



Types

- 10-FY07HVA050RG01-L984F48

Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions		Value	Unit
Buck Switch					
Collector-emitter voltage	V_{CES}			650	V
Collector current (DC current)	I_C	$T_j = T_{jmax}$	T_s = 80 °C	46	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}		200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	77	W
Gate-emitter voltage	V_{GES}			±30	V
Maximum junction temperature	T_{jmax}			175	°C
Buck Diode					
Peak repetitive reverse voltage	V_{RRM}			650	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$	T_s = 80 °C	42	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}		200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	61	W
Maximum junction temperature	T_{jmax}			175	°C
Boost Switch					
Collector-emitter voltage	V_{CES}			650	V
Collector current (DC current)	I_C	$T_j = T_{jmax}$	T_s = 80 °C	46	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}		200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	77	W
Gate-emitter voltage	V_{GES}			±30	V
Maximum junction temperature	T_{jmax}			175	°C

Maximum Ratings

T_j = 25 °C, unless otherwise specified

Parameter	Symbol	Conditions		Value	Unit
Boost Diode					
Peak repetitive reverse voltage	V_{RRM}			650	V
Forward current (DC current)	I_F	$T_j = T_{jmax}$	T_s = 80 °C	42	A
Repetitive peak forward current	I_{FRM}	t_p limited by T_{jmax}		200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$	T_s = 80 °C	61	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				7,85	mm
Comparative Tracking Index	CTI			≥ 200	

*100 % tested in production

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	
Buck Switch										
Static										
Gate-emitter threshold voltage	$V_{GE(th)}$			5	0,033	25	5	6	7	V
Collector-emitter saturation voltage	V_{CEsat}		15		50	25 125 150		1,5 1,66 1,7	1,9[(1)]	V
Collector-emitter cut-off current	I_{CES}		0	650		25			0,01	mA
Gate-emitter leakage current	I_{GES}		30	0		25			0,2	µA
Internal gate resistance	r_g							None		Ω
Input capacitance	C_{ies}	f = 1 Mhz	0	30		25		4200		pF
Output capacitance	C_{oes}							104		pF
Reverse transfer capacitance	C_{res}							79		pF
Gate charge	Q_g		15	400	50	25		141		nC
Thermal										
Thermal resistance junction to sink [(2)]	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						1,23		K/W
Dynamic										
Turn-on delay time	$t_{d(on)}$	R_{gon} = 8 Ω R_{goff} = 8 Ω	-5/15	400	50	25 125 150		41,8 40,59 39,93		ns
Rise time	t_r					25 125 150		12,59 13,07 13,27		ns
Turn-off delay time	$t_{d(off)}$					25 125 150		101,16 114,77 118,72		ns
Fall time	t_f					25 125 150		35,63 51,43 50,17		ns
Turn-on energy (per pulse)	E_{on}	Q_{rFWD}=1,86 µC Q_{rFWD}=2,78 µC Q_{rFWD}=3,24 µC				25 125 150		0,45 0,647 0,704		mWs
Turn-off energy (per pulse)	E_{off}					25 125 150		0,886 1,19 1,28		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	
Buck Diode										
Static										
Forward voltage	V_F				50	25 125 150		1,51 1,57 1,54	1,9(1)	V
Reverse leakage current	I_R	V_r = 650 V				25			10	µA
Thermal										
Thermal resistance junction to sink (2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						1,55		K/W
Dynamic										
Peak recovery current	I_{RRM}	d*i*/d*t*=5045 A/µs d*i*/d*t*=4662 A/µs d*i*/d*t*=4695 A/µs	-5/15	400	50	25 125 150		89,79 102,36 106,32		A
Reverse recovery time	t_{rr}					25 125 150		37,76 65,95 76,91		ns
Recovered charge	Q_r					25 125 150		1,86 2,78 3,24		µC
Reverse recovered energy	E_{rec}					25 125 150		0,658 0,931 1,07		mWs
Peak rate of fall of recovery current	$(di_{rf}/dt)_{max}$					25 125 150		4511,29 4761,63 4540,71		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	
Boost Switch										
Static										
Gate-emitter threshold voltage	$V_{GE(th)}$			5	0,033	25	5	6	7	V
Collector-emitter saturation voltage	V_{CEsat}		15		50	25 125 150		1,5 1,66 1,7	1,9(1)	V
Collector-emitter cut-off current	I_{CES}		0	650		25			0,01	mA
Gate-emitter leakage current	I_{GES}		30	0		25			0,2	μA
Internal gate resistance	r_g							None		Ω
Input capacitance	C_{ies}	f = 1 Mhz	0	30		25		4200		pF
Output capacitance	C_{oes}							104		pF
Reverse transfer capacitance	C_{res}							79		pF
Gate charge	Q_g		15	400	50	25		141		nC
Thermal										
Thermal resistance junction to sink (2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						1,23		K/W
Dynamic										
Turn-on delay time	$t_{d(on)}$	R_{gon} = 8 Ω R_{goff} = 8 Ω	-5/15	400	50	25 125 150		43,54 42,41 42,13		ns
Rise time	t_r					25 125 150		12,84 13,45 13,84		ns
Turn-off delay time	$t_{d(off)}$					25 125 150		100,03 112,83 116,89		ns
Fall time	t_f					25 125 150		33,51 36,72 38,15		ns
Turn-on energy (per pulse)	E_{on}	Q_{rFWD}=1,73 μC Q_{rFWD}=2,36 μC Q_{rFWD}=3,07 μC				25 125 150		0,372 0,486 0,532		mWs
Turn-off energy (per pulse)	E_{off}					25 125 150		0,849 1,14 1,23		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	
Boost Diode										
Static										
Forward voltage	V_F				50	25 125 150		1,51 1,57 1,54	1,9(1)	V
Reverse leakage current	I_R	V_r = 650 V				25			10	µA
Thermal										
Thermal resistance junction to sink (2)	$R_{th(j-s)}$	λ_{paste} = 3,4 W/mK (PSX)						1,55		K/W
Dynamic										
Peak recovery current	I_{RRM}	di/dt=5038 A/µs di/dt=4365 A/µs di/dt=4705 A/µs	-5/15	400	50	25 125 150		83,29 90,95 94,29		A
Reverse recovery time	t_{rr}					25 125 150		37,48 47,93 84,18		ns
Recovered charge	Q_r					25 125 150		1,73 2,36 3,07		µC
Reverse recovered energy	E_{rec}					25 125 150		0,564 0,735 0,973		mWs
Peak rate of fall of recovery current	$(di_{rf}/dt)_{max}$					25 125 150		4237,78 4143,6 4114,86		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	
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					25		130		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	

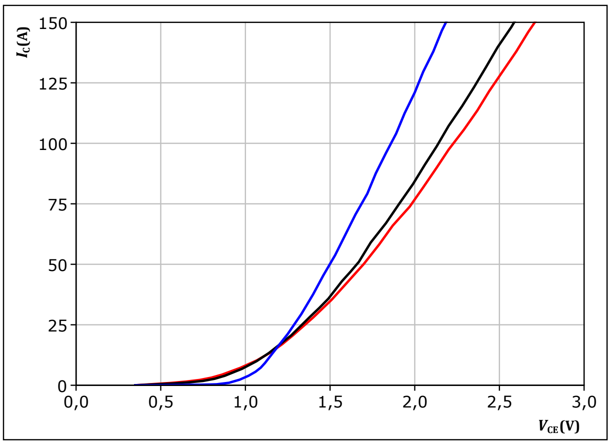
(1) Value at chip level
(2) Only valid with pre-applied Vincotech thermal interface material.

Buck Switch Characteristics

figure 1. **IGBT**

Typical output characteristics

I_C = f(V_{CE})



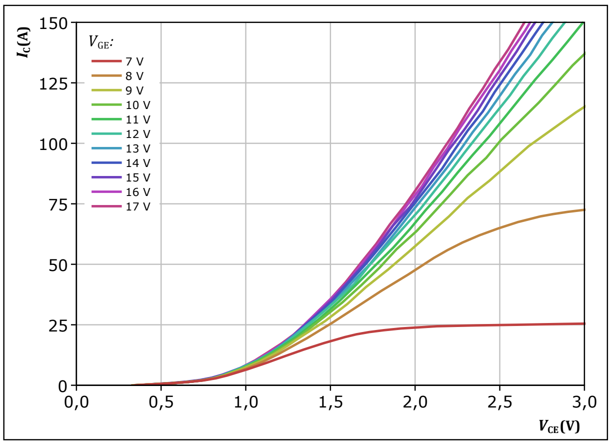
t_p =	250	µs
V_{GE} =	15	V

T_j: 25 °C, 125 °C, 150 °C

figure 2. **IGBT**

Typical output characteristics

I_C = f(V_{CE})



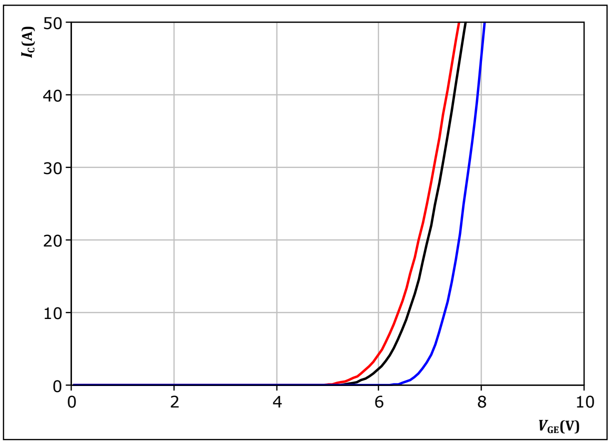
t_p =	250	µs
T_j =	150	°C

V_{GE} from 7 V to 17 V in steps of 1 V

figure 3. **IGBT**

Typical transfer characteristics

I_C = f(V_{GE})



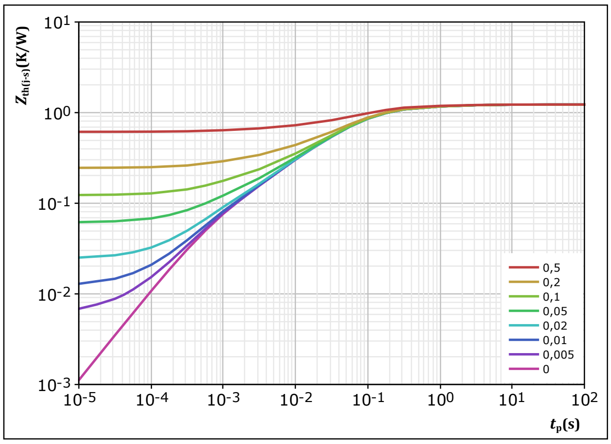
t_p =	250	µs
V_{CE} =	10	V

T_j: 25 °C, 125 °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	
$R_{th(j-s)}$ =	1,228	K/W

IGBT thermal model values

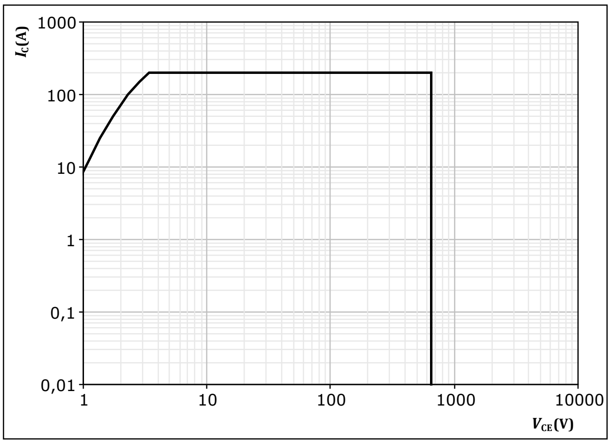
R (K/W)	τ (s)
5,07E-02	3,25E+00
1,43E-01	5,26E-01
5,97E-01	9,03E-02
2,58E-01	2,71E-02
1,27E-01	5,65E-03
5,33E-02	7,25E-04

Buck Switch Characteristics

figure 5.	IGBT

Safe operating area

I_C = f(V_{CE})



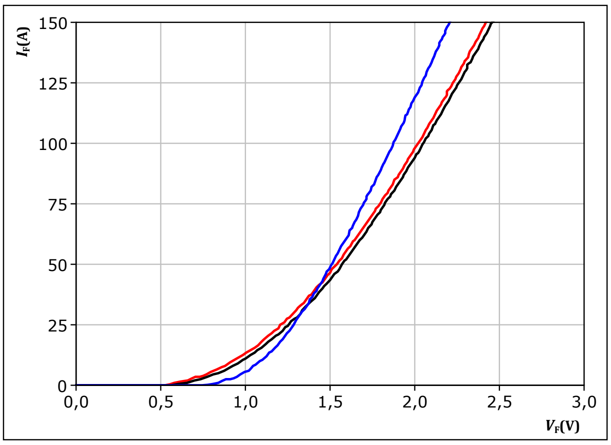
D =	single pulse	
T_s =	80	°C
V_{GE} =	15	V
T_j =	T_{jmax}	

Buck Diode Characteristics

figure 6. **FWD**

Typical forward characteristics

$I_F = f(V_F)$



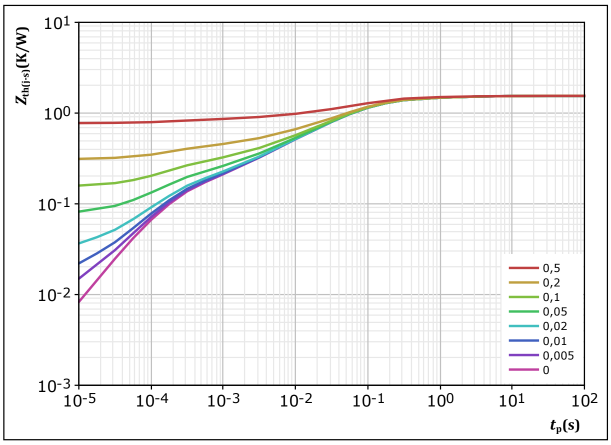
t_p = 250 µs

T_j: 25 °C, 125 °C, 150 °C

figure 7. **FWD**

Transient thermal impedance as a function of pulse width

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



D = t_p / T

$R_{th(j-s)}$ = 1,548 K/W

FWD thermal model values

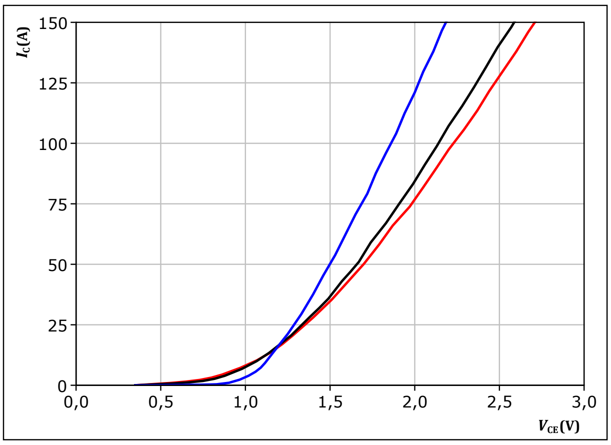
R (K/W)	τ (s)
4,44E-02	5,26E+00
1,14E-01	8,12E-01
4,83E-01	1,25E-01
4,67E-01	4,08E-02
2,41E-01	7,57E-03
7,79E-02	1,14E-03
1,22E-01	1,66E-04

Boost Switch Characteristics

figure 8. IGBT

Typical output characteristics

I_C = f(V_{CE})

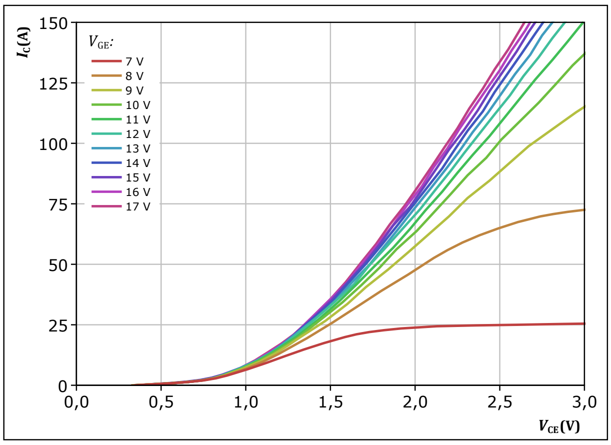


t_p = 250 µs
V_{GE} = 15 V
T_j: 25 °C, 125 °C, 150 °C

figure 9. IGBT

Typical output characteristics

I_C = f(V_{CE})

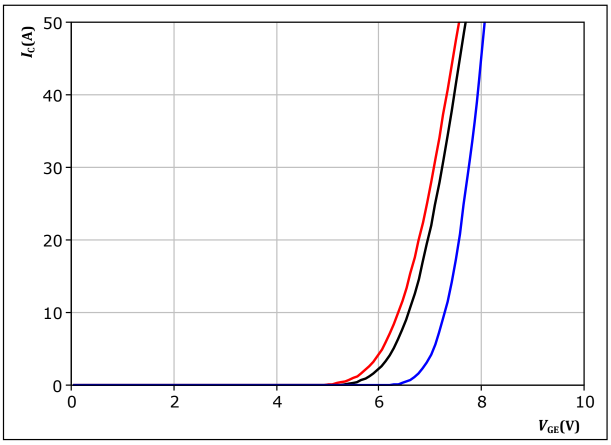


t_p = 250 µs
T_j = 150 °C
V_{GE} from 7 V to 17 V in steps of 1 V

figure 10. IGBT

Typical transfer characteristics

I_C = f(V_{GE})

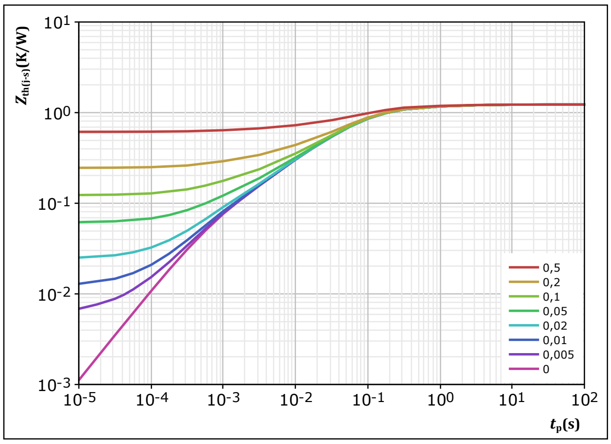


t_p = 250 µs
V_{CE} = 10 V
T_j: 25 °C, 125 °C, 150 °C

figure 11. IGBT

Transient thermal impedance as a function of pulse width

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



D = t_p / T
$R_{th(j-s)}$ = 1,228 K/W

IGBT thermal model values

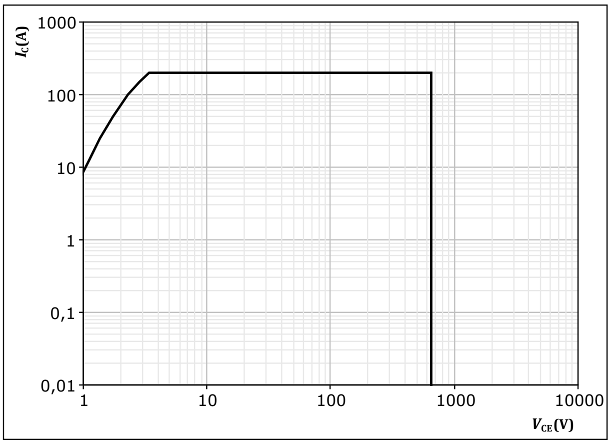
R (K/W)	τ (s)
5,07E-02	3,25E+00
1,43E-01	5,26E-01
5,97E-01	9,03E-02
2,58E-01	2,71E-02
1,27E-01	5,65E-03
5,33E-02	7,25E-04

Boost Switch Characteristics

figure 12.	IGBT

Safe operating area

I_C = f(V_{CE})



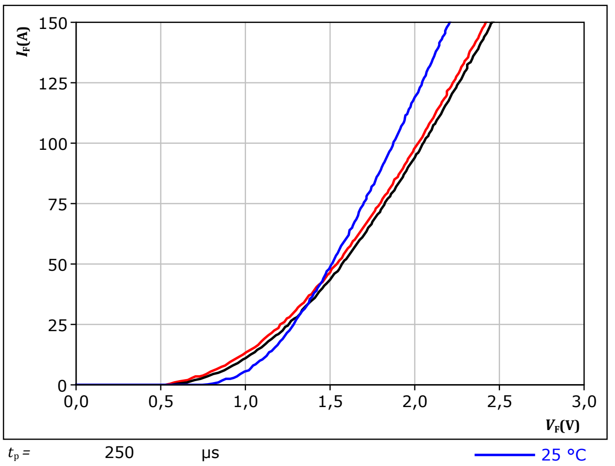
D =	single pulse	
T_s =	80	°C
V_{GE} =	15	V
T_j =	T_{jmax}	

Boost Diode Characteristics

figure 13. FWD

Typical forward characteristics

$I_F = f(V_F)$



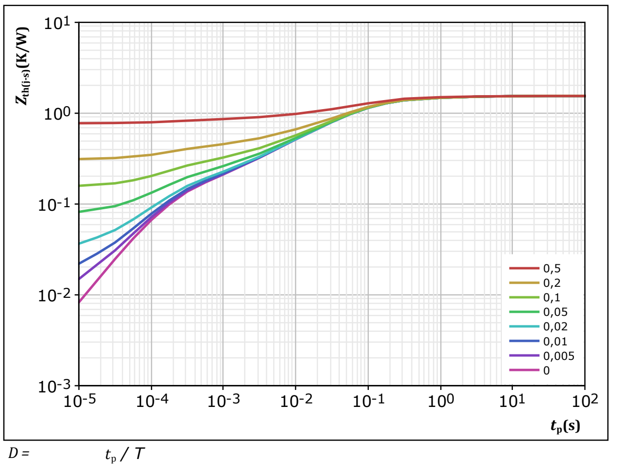
t_p = 250 µs

T_j: 25 °C, 125 °C, 150 °C

figure 14. FWD

Transient thermal impedance as a function of pulse width

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



$D = t_p / T$

$R_{th(j-s)}$ = 1,548 K/W

FWD thermal model values

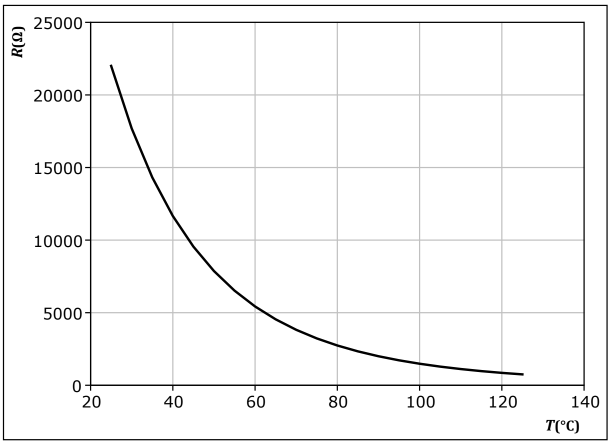
R (K/W)	τ (s)
4,44E-02	5,26E+00
1,14E-01	8,12E-01
4,83E-01	1,25E-01
4,67E-01	4,08E-02
2,41E-01	7,57E-03
7,79E-02	1,14E-03
1,22E-01	1,66E-04

Thermistor Characteristics

figure 15. **Thermistor**

Typical NTC characteristic as function of temperature

$R_T = f(T)$

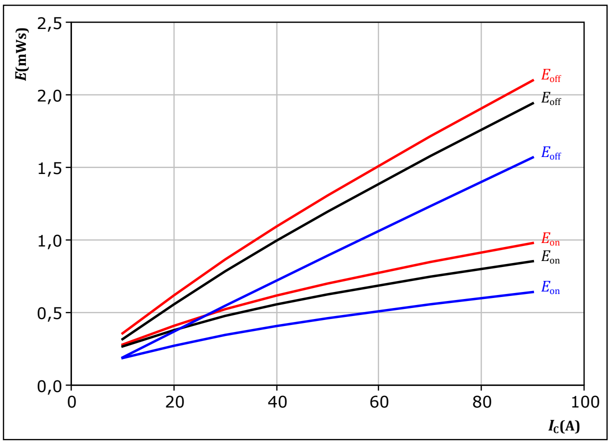


Buck Switching Characteristics

figure 16. **IGBT**

Typical switching energy losses as a function of collector current

E = f(I_C)



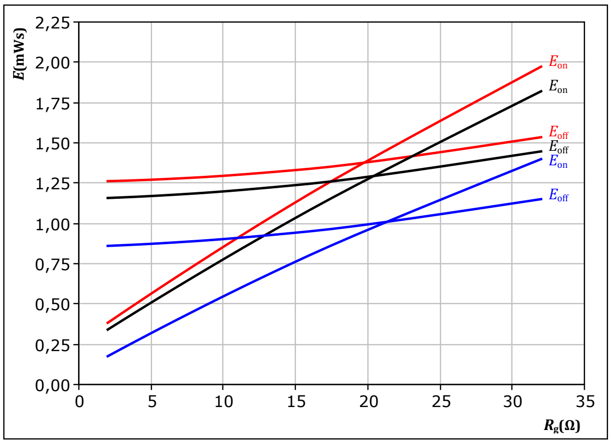
With an inductive load at

V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
R_{gon} =	8	Ω		150 °C
R_{goff} =	8	Ω		

figure 17. **IGBT**

Typical switching energy losses as a function of gate resistor

E = f(R_g)



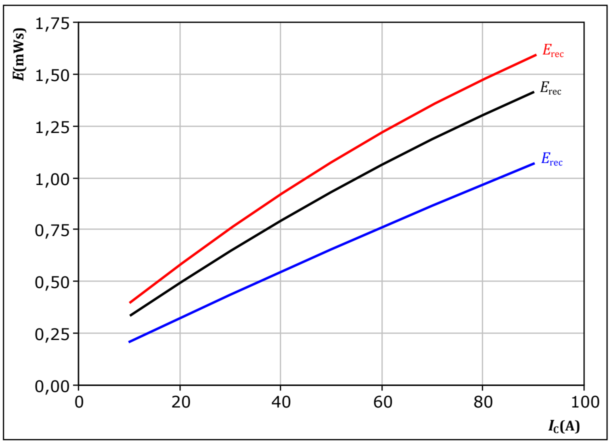
With an inductive load at

V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
I_C =	50	A		150 °C

figure 18. **FWD**

Typical reverse recovered energy loss as a function of collector current

E_{rec} = f(I_C)



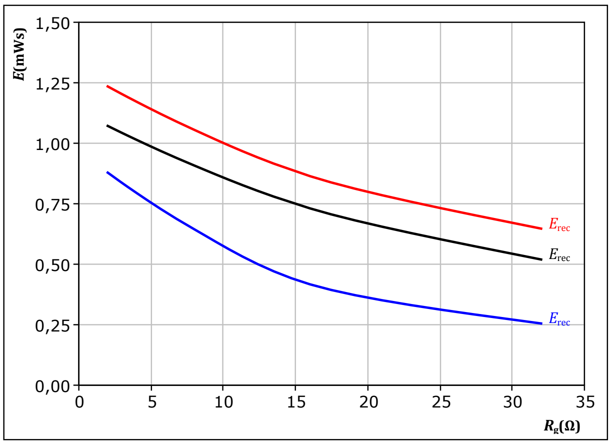
With an inductive load at

V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
R_{gon} =	8	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

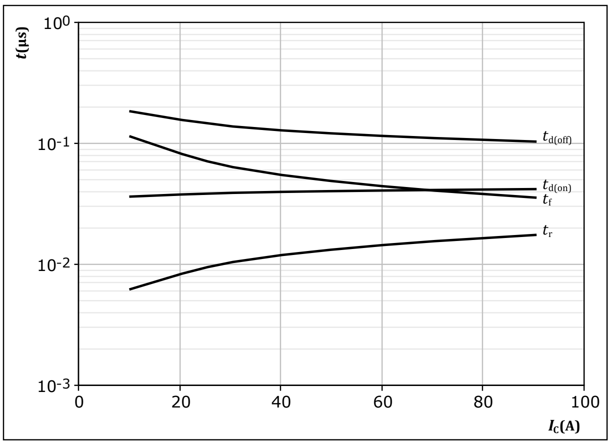
V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
I_C =	50	A		150 °C

Buck Switching Characteristics

figure 20. **IGBT**

Typical switching times as a function of collector current

t = f(I_C)



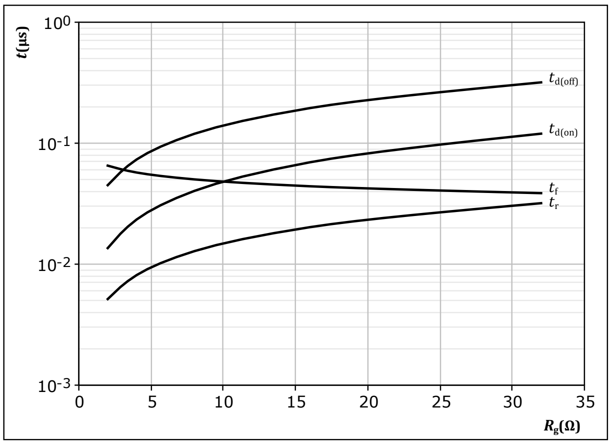
With an inductive load at

T_j =	150	°C
V_{CE} =	400	V
V_{GE} =	-5/15	V
R_{gon} =	8	Ω
R_{goff} =	8	Ω

figure 21. **IGBT**

Typical switching times as a function of gate resistor

t = f(R_g)



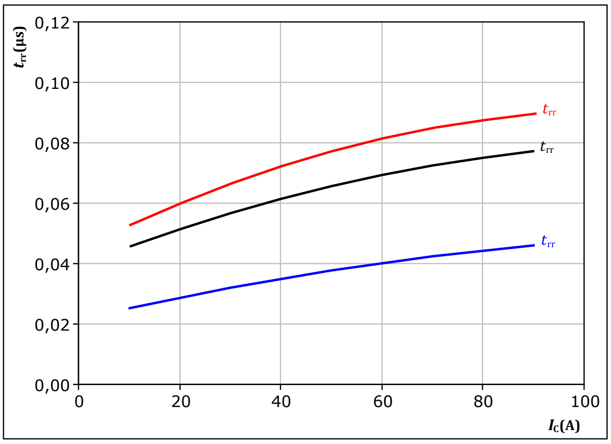
With an inductive load at

T_j =	150	°C
V_{CE} =	400	V
V_{GE} =	-5/15	V
I_C =	50	A

figure 22. **FWD**

Typical reverse recovery time as a function of collector current

t_{rr} = f(I_C)



With an inductive load at

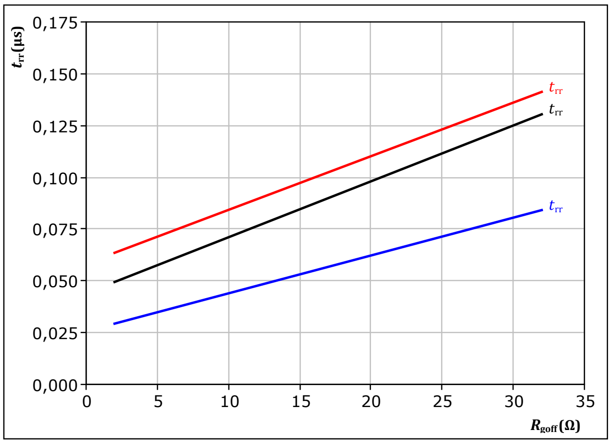
V_{CE} =	400	V
V_{GE} =	-5/15	V
R_{gon} =	8	Ω

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} =	400	V
V_{GE} =	-5/15	V
I_C =	50	A

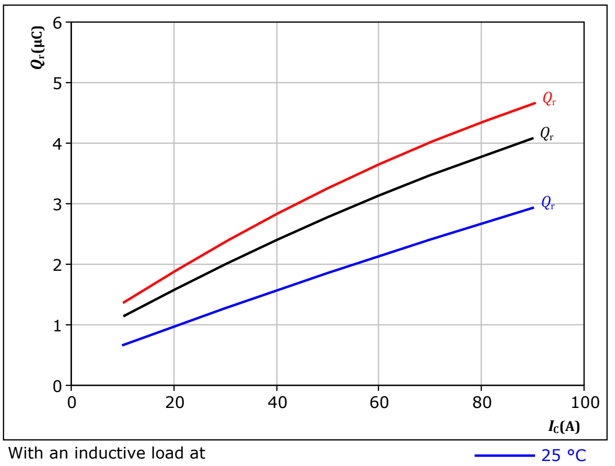
T_j: 25 °C, 125 °C, 150 °C

Buck Switching Characteristics

figure 24. **FWD**

Typical recovered charge as a function of collector current

Q_r = f(I_C)



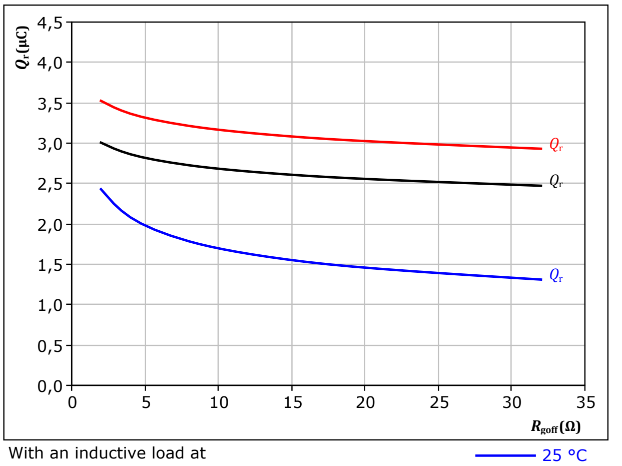
With an inductive load at

V_{CE} =	400	V	T_j: 25 °C / 125 °C / 150 °C
V_{GE} =	-5/15	V	
R_{gon} =	8	Ω	

figure 25. **FWD**

Typical recovered charge as a function of turn off gate resistor

Q_r = f(R_{goff})



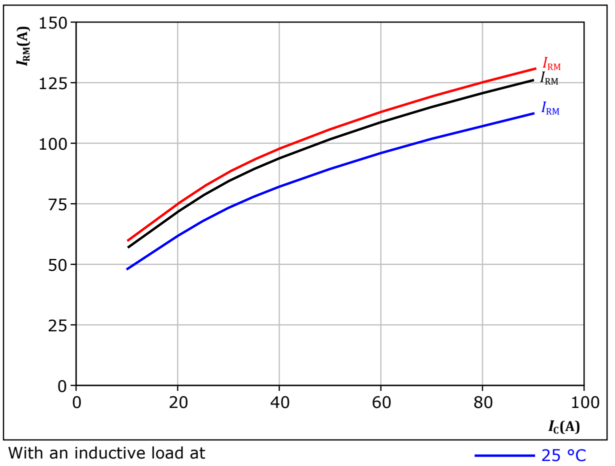
With an inductive load at

V_{CE} =	400	V	T_j: 25 °C / 125 °C / 150 °C
V_{GE} =	-5/15	V	
I_C =	50	A	

figure 26. **FWD**

Typical peak reverse recovery current as a function of collector current

I_{RM} = f(I_C)



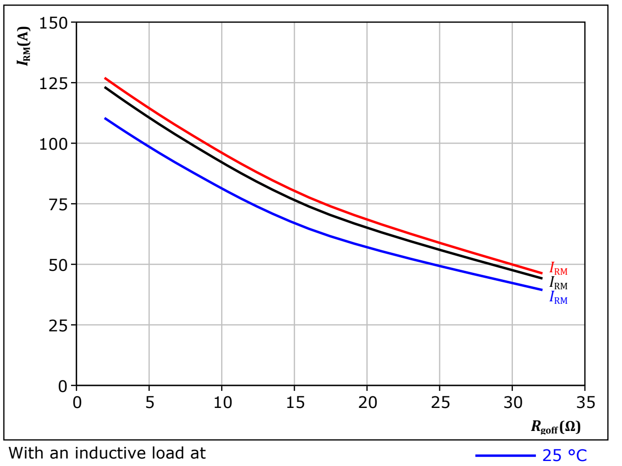
With an inductive load at

V_{CE} =	400	V	T_j: 25 °C / 125 °C / 150 °C
V_{GE} =	-5/15	V	
R_{gon} =	8	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

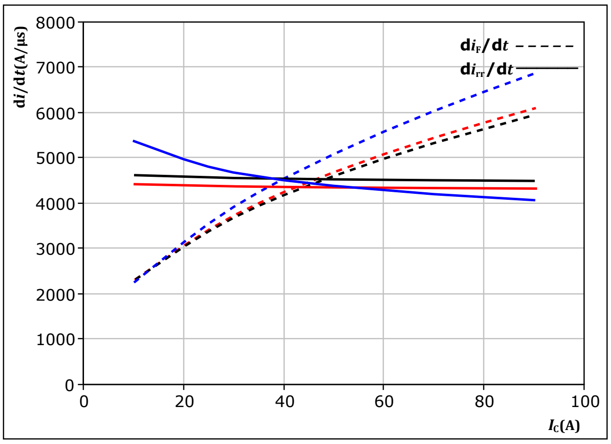
V_{CE} =	400	V	T_j: 25 °C / 125 °C / 150 °C
V_{GE} =	-5/15	V	
I_C =	50	A	

Buck Switching Characteristics

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)



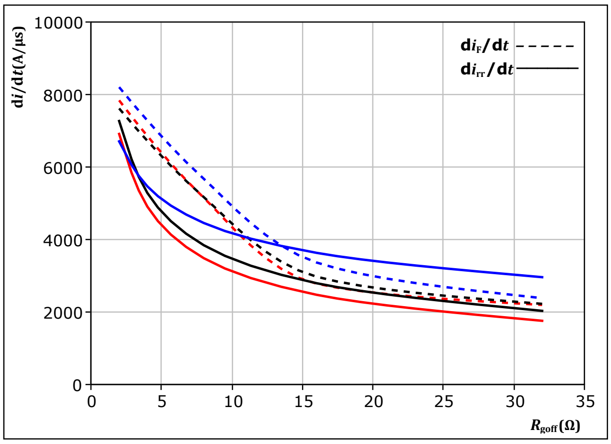
With an inductive load at

V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
R_{gon} =	8	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})



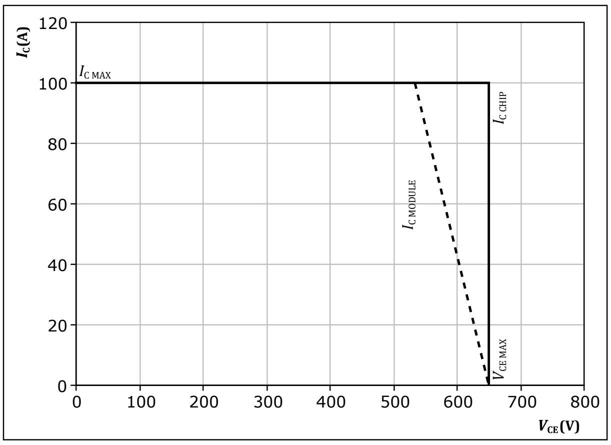
With an inductive load at

V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
I_C =	50	A		150 °C

figure 30. **IGBT**

Reverse bias safe operating area

I_C = f(V_{CE})



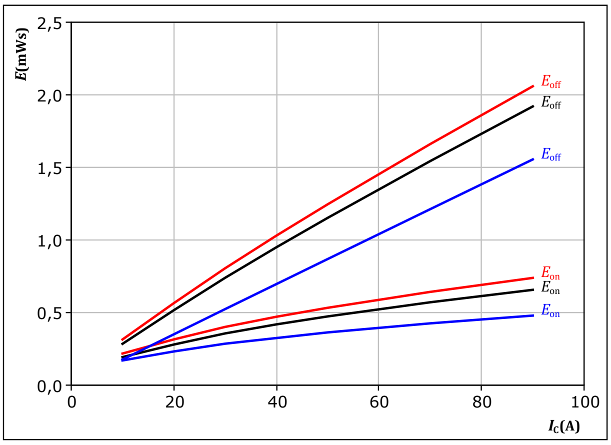
At	T_j =	150	°C
	R_{gon} =	8	Ω
	R_{goff} =	8	Ω

Boost Switching Characteristics

figure 31. **IGBT**

Typical switching energy losses as a function of collector current

$E = f(I_C)$



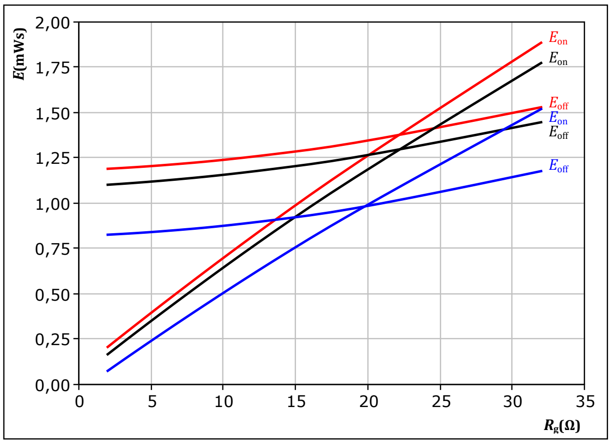
With an inductive load at

V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
R_{gon} =	8	Ω		150 °C
R_{goff} =	8	Ω		

figure 32. **IGBT**

Typical switching energy losses as a function of gate resistor

$E = f(R_g)$



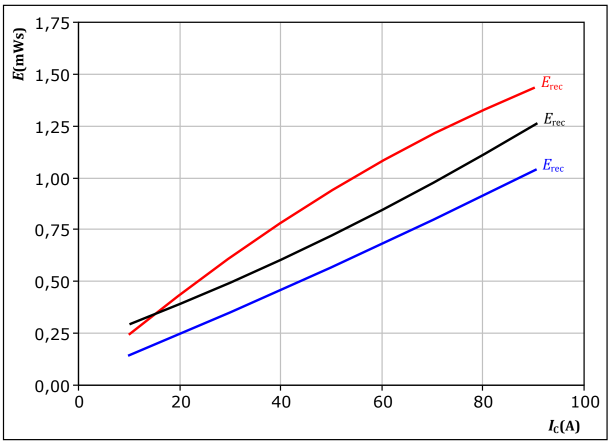
With an inductive load at

V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
I_C =	50	A		150 °C

figure 33. **FWD**

Typical reverse recovered energy loss as a function of collector current

$E_{rec} = f(I_C)$



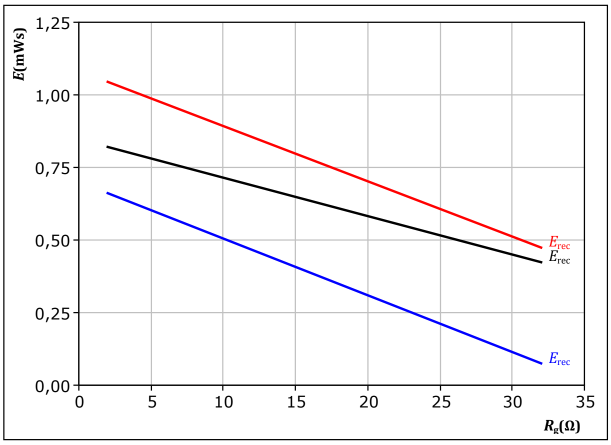
With an inductive load at

V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
R_{gon} =	8	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

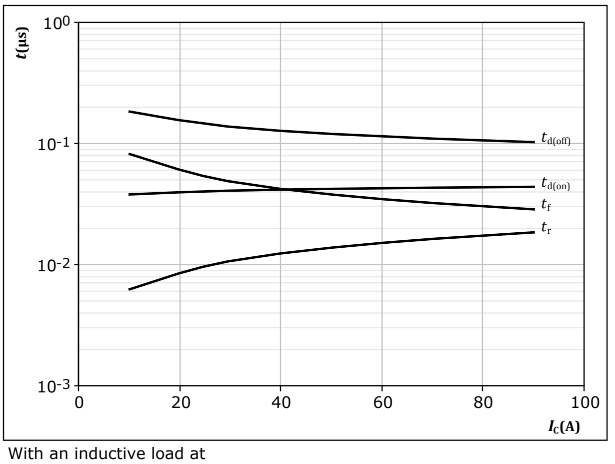
V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
I_C =	50	A		150 °C

Boost Switching Characteristics

figure 35. **IGBT**

Typical switching times as a function of collector current

t = f(I_C)



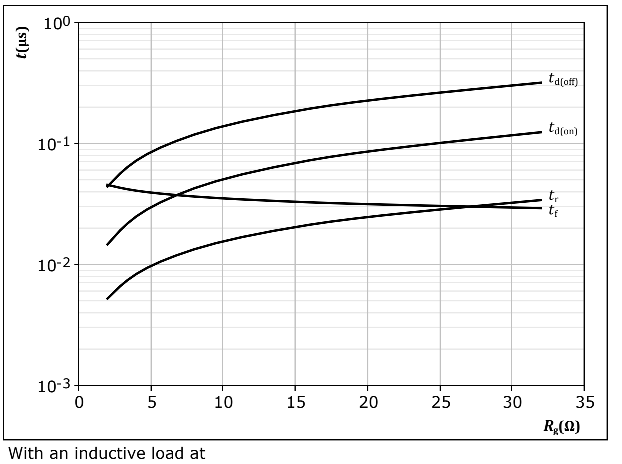
With an inductive load at

T_j =	150	°C
V_{CE} =	400	V
V_{GE} =	-5/15	V
R_{gon} =	8	Ω
R_{goff} =	8	Ω

figure 36. **IGBT**

Typical switching times as a function of gate resistor

t = f(R_g)



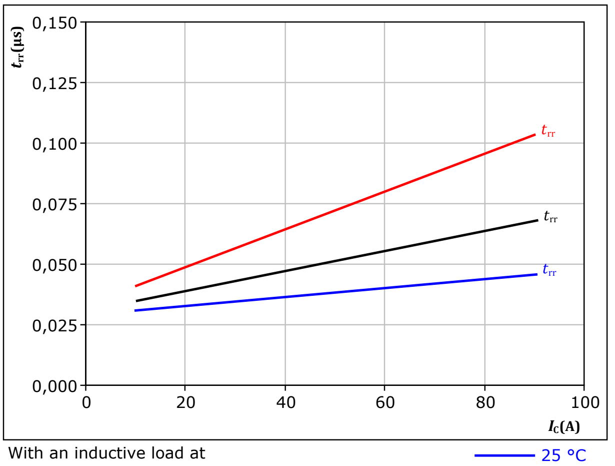
With an inductive load at

T_j =	150	°C
V_{CE} =	400	V
V_{GE} =	-5/15	V
I_C =	50	A

figure 37. **FWD**

Typical reverse recovery time as a function of collector current

t_{rr} = f(I_C)



With an inductive load at

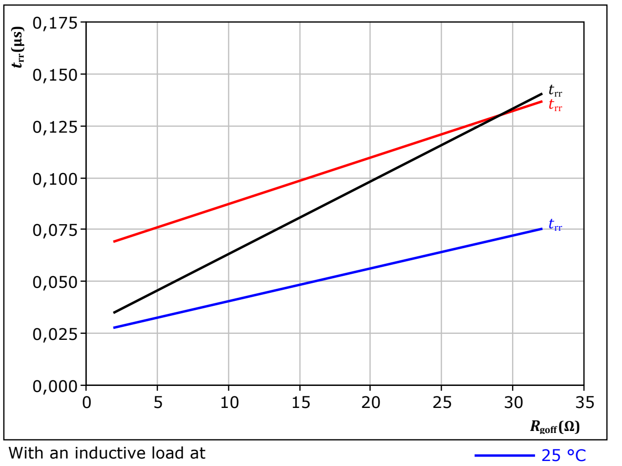
V_{CE} =	400	V
V_{GE} =	-5/15	V
R_{gon} =	8	Ω

T_j: 25 °C, 125 °C, 150 °C

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} =	400	V
V_{GE} =	-5/15	V
I_C =	50	A

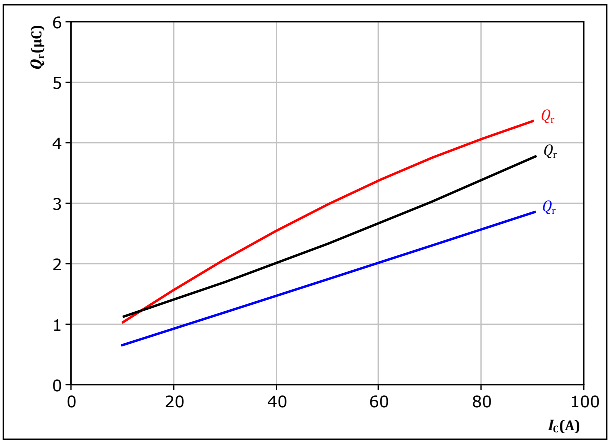
T_j: 25 °C, 125 °C, 150 °C

Boost Switching Characteristics

figure 39. FWD

Typical recovered charge as a function of collector current

Q_r = f(I_C)



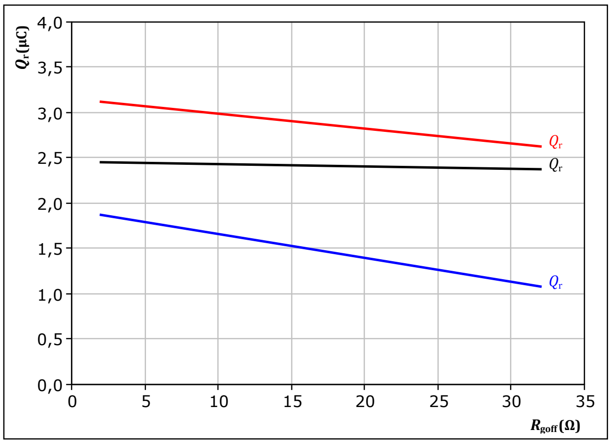
With an inductive load at

V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
R_{gon} =	8	Ω		150 °C

figure 40. FWD

Typical recovered charge as a function of turn off gate resistor

Q_r = f(R_{goff})



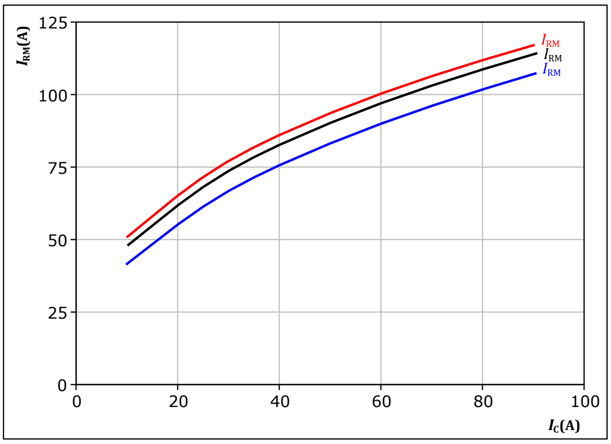
With an inductive load at

V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
I_C =	50	A		150 °C

figure 41. FWD

Typical peak reverse recovery current as a function of collector current

I_{RM} = f(I_C)



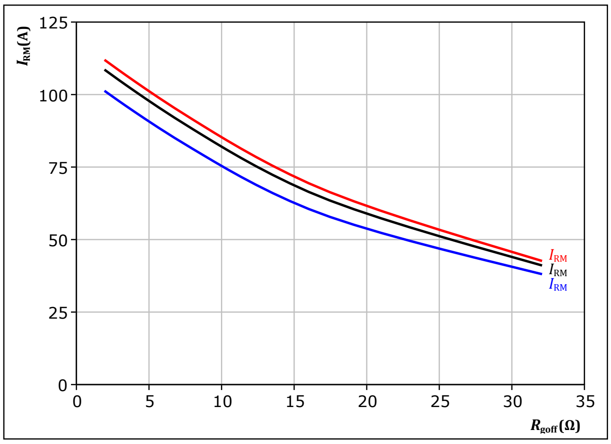
With an inductive load at

V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
R_{gon} =	8	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

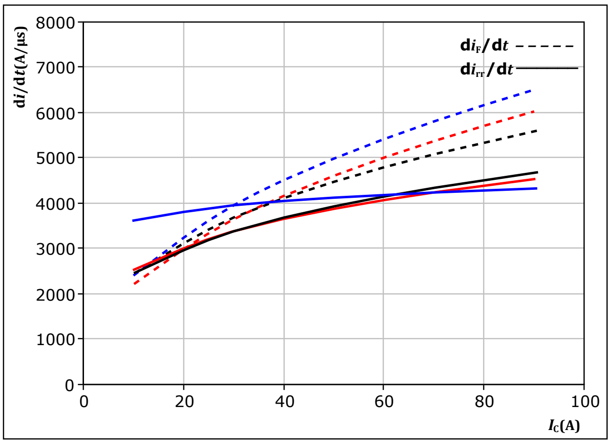
V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
I_C =	50	A		150 °C

Boost Switching Characteristics

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)



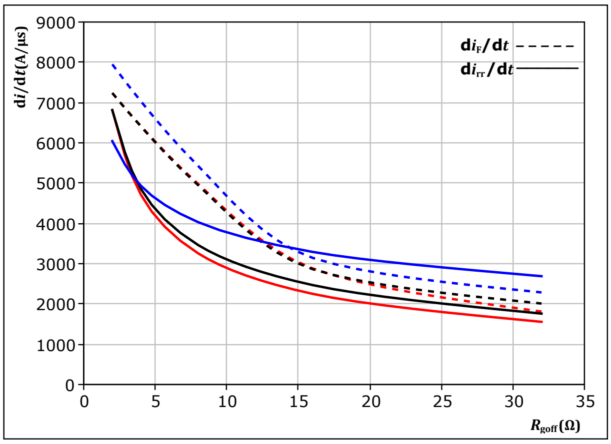
With an inductive load at

V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
R_{gon} =	8	Ω		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})



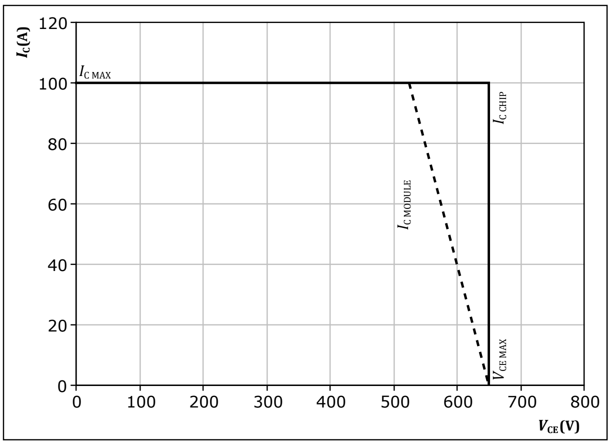
With an inductive load at

V_{CE} =	400	V	T_j:	25 °C
V_{GE} =	-5/15	V		125 °C
I_C =	50	A		150 °C

figure 45. **IGBT**

Reverse bias safe operating area

I_C = f(V_{CE})



At			
	T_j =	150	°C
	R_{gon} =	8	Ω
	R_{goff} =	8	Ω

Switching Definitions

figure 46. **IGBT**

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

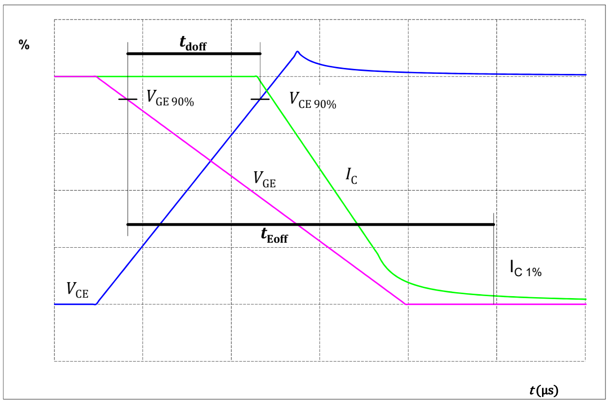


figure 47. **IGBT**

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

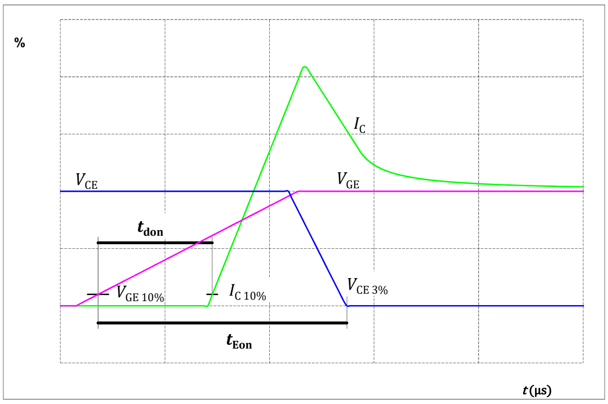


figure 48. **IGBT**

Turn-off Switching Waveforms & definition of t_f

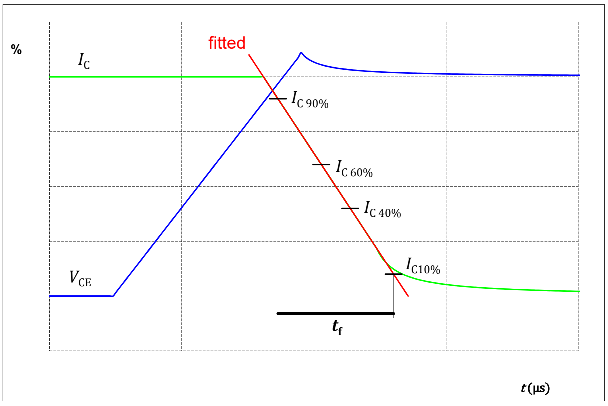
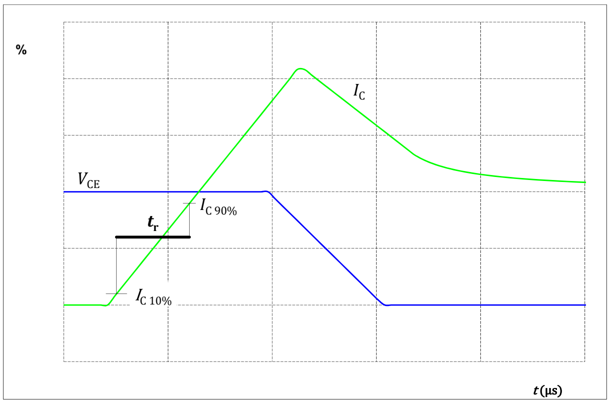


figure 49. **IGBT**

Turn-on Switching Waveforms & definition of t_r



Switching Definitions

figure 50. **FWD**

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

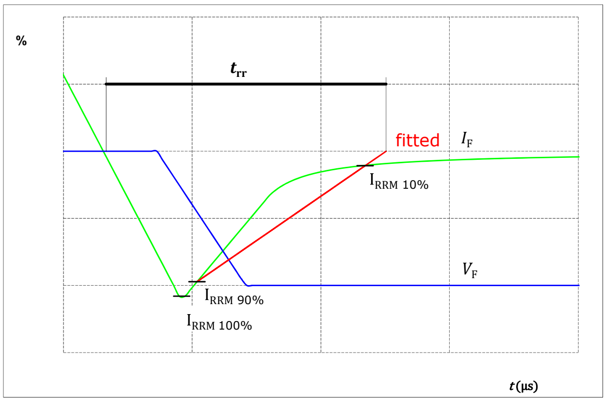
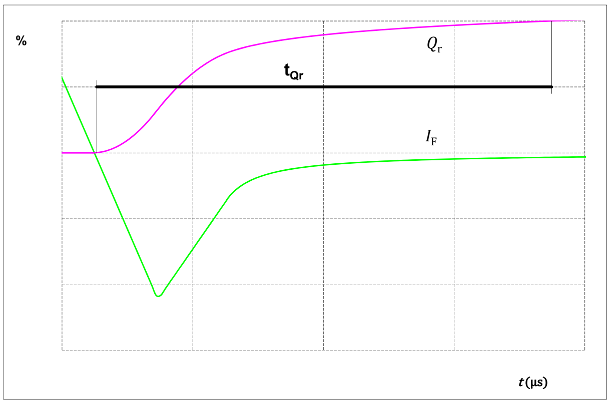


figure 51. **FWD**

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



Ordering Code

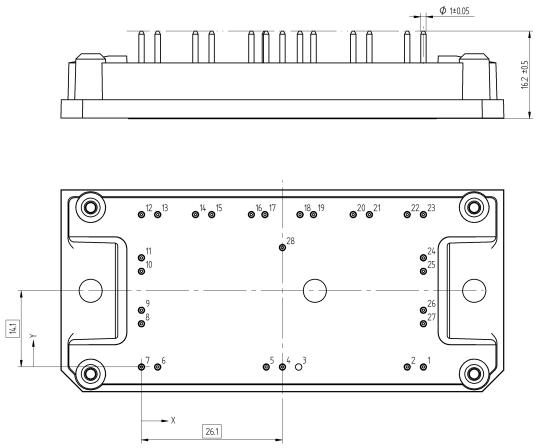
Version	Ordering Code
Without thermal paste	10-FY07HVA050RG01-L984F48
With thermal paste (5,2 W/mK, PTM6000HV)	10-FY07HVA050RG01-L984F48-/7/
With thermal paste (3,4 W/mK, PSX-P7)	10-FY07HVA050RG01-L984F48-/3/

Marking

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

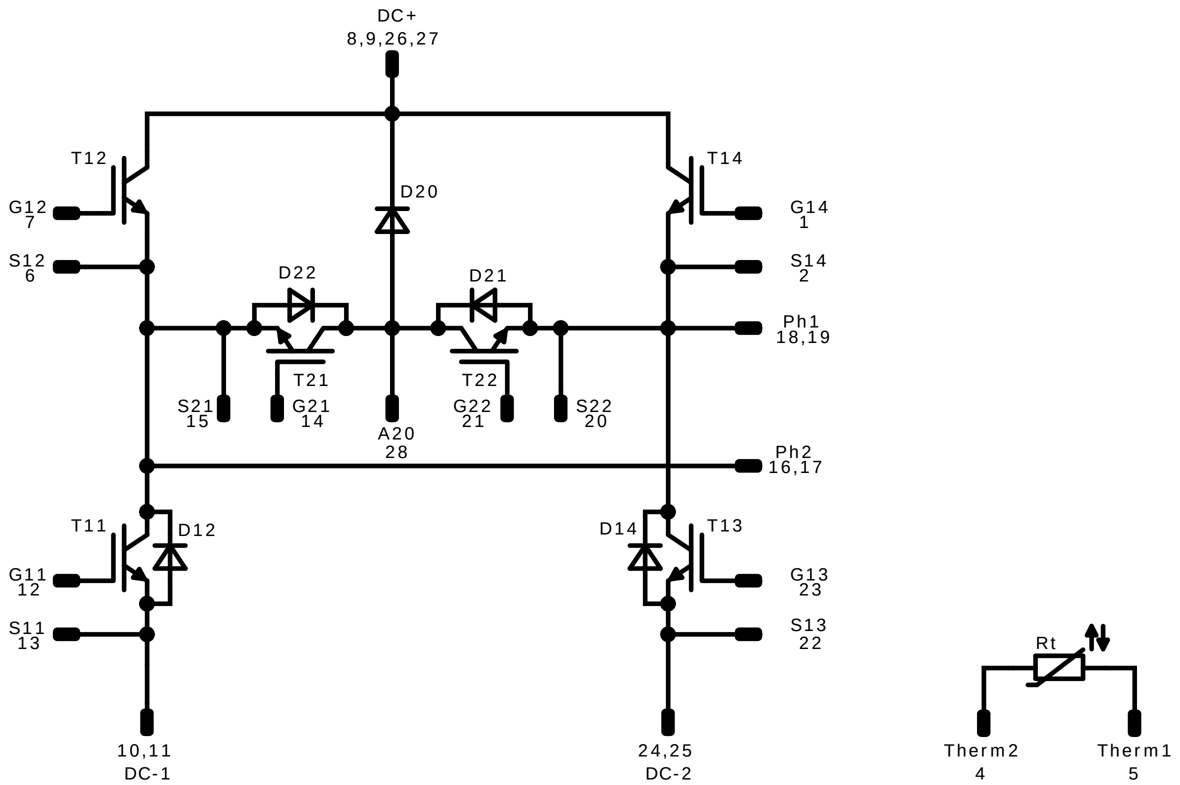
Outline

Pin table [mm]			
Pin	X	Y	Function
1	52,2	0	G14
2	49,2	0	S14
3	not assembled		
4	26,1	0	Therm2
5	23,1	0	Therm1
6	3	0	S12
7	0	0	G12
8	0	8	DC+
9	0	10,5	DC+
10	0	17,7	DC-1
11	0	20,2	DC-1
12	0	28,2	G11
13	3	28,2	S11
14	10	28,2	G21
15	13	28,2	S21
16	20,35	28,2	Ph2
17	22,85	28,2	Ph2
18	29,35	28,2	Ph1
19	31,85	28,2	Ph1
20	39,2	28,2	S22
21	42,2	28,2	G22
22	49,2	28,2	S13
23	52,2	28,2	G13
24	52,2	20,2	DC-2
25	52,2	17,7	DC-2
26	52,2	10,5	DC+
27	52,2	8	DC+
28	26,1	22,1	A20



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, T13, T12, T14	IGBT	650 V	50 A	Buck Switch	
D22, D21	FWD	650 V	50 A	Buck Diode	
T21, T22	IGBT	650 V	50 A	Boost Switch	
D12, D14, D20	FWD	650 V	50 A	Boost Diode	
Rt	NTC			Thermistor	

Packaging instruction				
Standard packaging quantity (SPQ) 100	>SPQ	Standard	<SPQ	Sample

Handling instruction
Handling instructions for *flow* 1 packages see vincotech.com website.

Package data
Package data for *flow* 1 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-FY07HVA050RG01-L984F48-D1-14	23 Jan. 2022	Initial Release	