


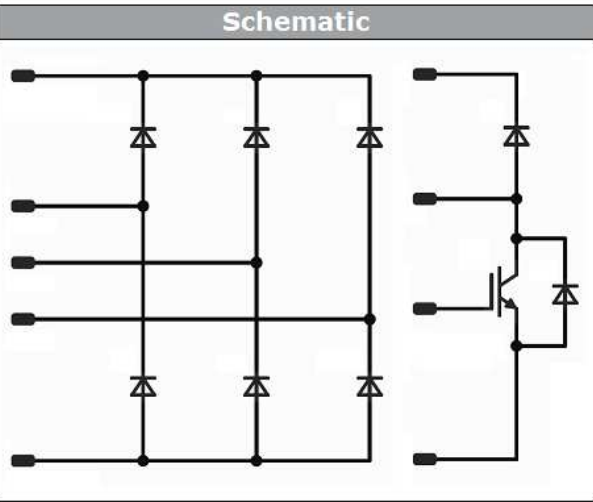
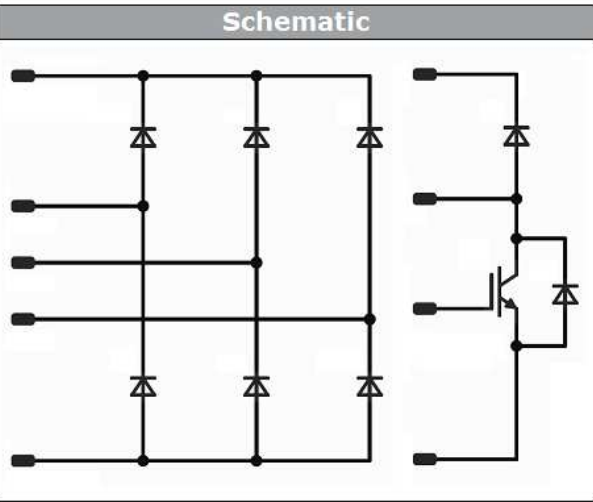
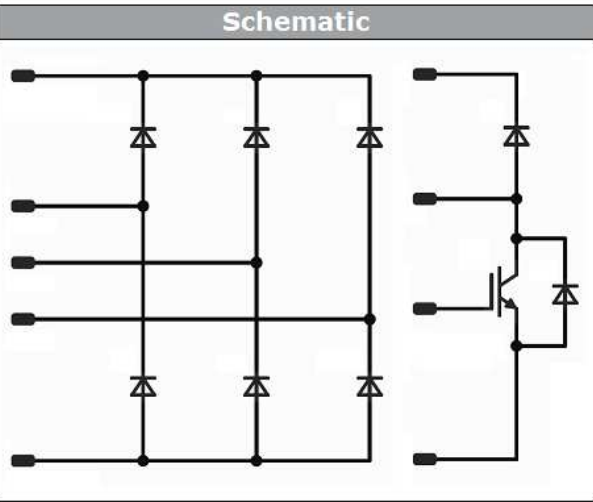




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<i>flow</i> CON 0 B	1600 V / 28 A				
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Maximum Ratings

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

Parameter	Symbol	Conditions	Value	Unit
Rectifier Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		1600	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_h = 80^{\circ}\text{C}$	26	A
Surge (non-repetitive) forward current	I_{FSM}	50 Hz Single Half Sine Wave $t_p = 10 \text{ ms}$ 50 Hz sine $T_j = 150^{\circ}\text{C}$	270	A
Surge current capability	i^2t		370	A^2s
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_h = 80^{\circ}\text{C}$	16	W
Maximum Junction Temperature	T_{jmax}		150	$^{\circ}\text{C}$



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Parameter	Symbol	Condition	Value	Unit
Brake Switch				
Collector-emitter voltage	V_{CES}		1200	V
Collector current	I_C	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	39	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	105	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80^\circ\text{C}$	101	W
Gate-emitter voltage	V_{GES}		± 20	V
Short circuit ratings	t_{SC}	$T_j \leq 150^\circ\text{C}$	10	μs
	V_{CC}	$V_{GE} = 15\text{V}$	800	V
Maximum Junction Temperature	T_{jmax}		175	$^\circ\text{C}$

Parameter	Symbol	Conditions	Value	Unit
Brake Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		1600	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_h = 80^\circ\text{C}$	26	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_h = 80^\circ\text{C}$	16	W
Maximum Junction Temperature	T_{jmax}		150	$^\circ\text{C}$

Parameter	Symbol	Conditions	Value	Unit
Brake Protection Diode				
Peak Repetitive Reverse Voltage	V_{RRM}		1200	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_h = 80^\circ\text{C}$	6	A
Repetitive peak forward current	I_{FRM}		6	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_h = 80^\circ\text{C}$	22	W
Maximum Junction Temperature	T_{jmax}		150	$^\circ\text{C}$



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Parameter	Symbol	Conditions	Value	Unit	
Module Properties					
Thermal Properties					
Storage temperature	T_{stg}		-40...+125	°C	
Operation Junction Temperature	T_{jop}		-40...+(T_{jmax} - 25)	°C	
Isolation Properties					
Isolation voltage	V_{isol}	DC voltage	$t_p=2s$	4000	V
Creepage distance				min 12,7	mm
Clearance				min 12,7	mm
Comparative Tracking Index	CTI			>200	



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Characteristic Values

Rectifier Diode

Parameter	Symbol	Conditions					Value			Unit
				V_r [V]	I_F [A]	T_j [°C]	Min	Typ	Max	

Static

Forward voltage	V_F				13	25 125 150		0,99 0,90 -	1,21	V
Reverse leakage current	I_r			1600		25 150			50 1100	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	Phase-Change Material $\lambda=3,4W/mK$						1,32		K/W
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Brake Switch

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

Static

Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}$			0,0012	25 125		5,3	5,8	6,3	V
Collector-emitter saturation voltage	V_{CEsat}		15		35	25 125 150		1,58	1,87 - 2,30	2,07	V
Collector-emitter cut-off current	I_{CES}		0	1200		25 125				5	μA
Gate-emitter leakage current	I_{GES}		20	0		25 125				120	nA
Internal gate resistance	r_g							none			Ω
Input capacitance	C_{ies}	f=1 MHz	0	25		25			2000		pF
Reverse transfer capacitance	C_{res}								70		

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	Phase-Change Material $\lambda=3,4W/mK$						0,94			K/W
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Brake Diode

Parameter	Symbol	Conditions					Value			Unit
		V_r [V]	I_F [A]	T_j [°C]	Min	Typ	Max			
Static										
Forward voltage	V_F		13	25 125 150			0,99 0,90 -	1,21		V
Reverse leakage current	I_r		1600	25 150				50 1100		μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	Phase-Change Material $\lambda=3,4W/mK$						1,32		K/W
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Brake Protection Diode

Parameter	Symbol	Conditions					Value			Unit
		V_r [V]	I_F [A]	T_j [°C]	Min	Typ	Max			
Static										
Forward voltage	V_F		3	25 125 150			1,65 - 1,51	1,6		V
Reverse leakage current	I_r		1200	25 150				250 -		μA

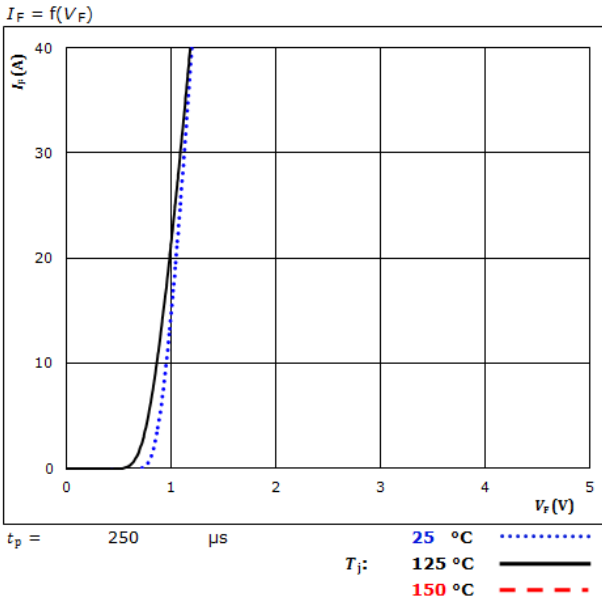
Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	Phase-Change Material $\lambda=3,4W/mK$						3,2		K/W
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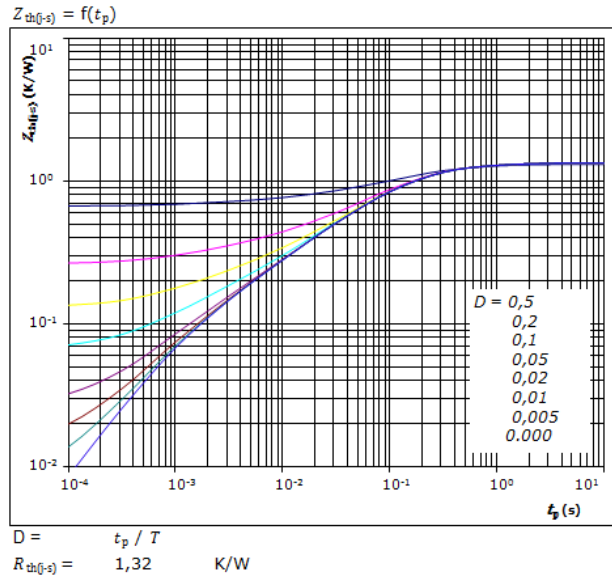


Rectifier Diode Characteristics

Typical forward characteristics Rectifier Diode



Transient thermal impedance as a function of pulse width Rectifier Diode



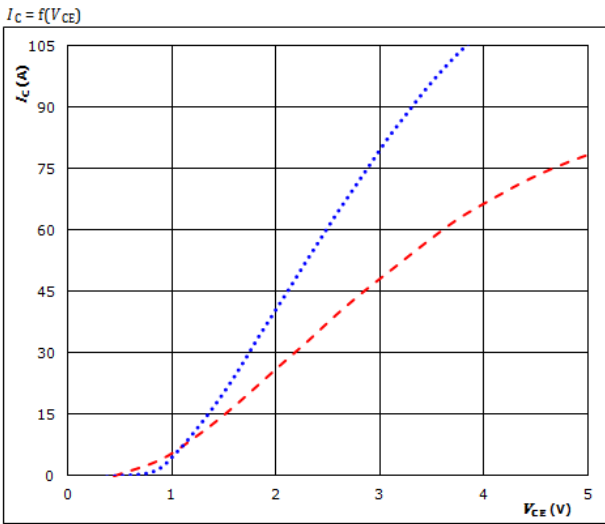
Diode thermal model values

R (K/W)	τ (s)
1,25E-01	9,45E-01
4,95E-01	1,83E-01
4,61E-01	5,96E-02
1,67E-01	9,54E-03
7,07E-02	1,16E-03



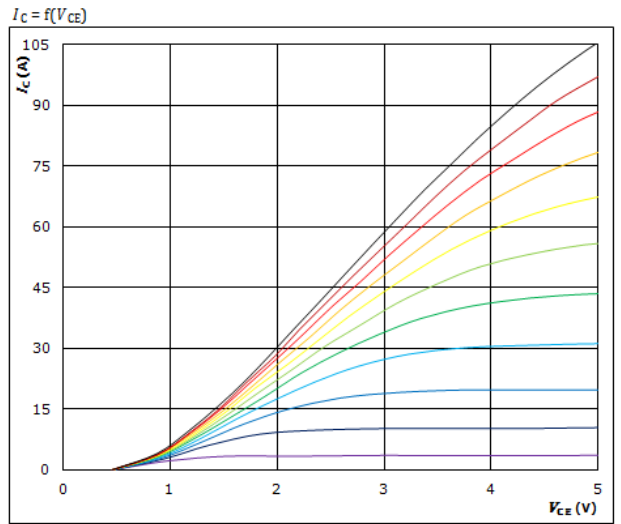
Brake Switch Characteristics

Typical output characteristics IGBT



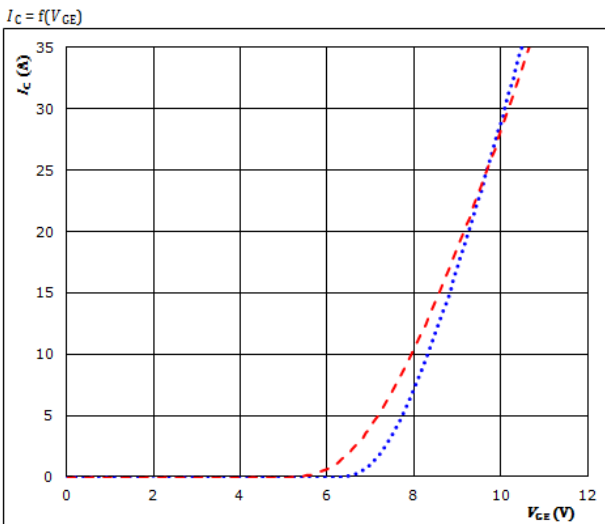
$t_p = 250 \mu s$
 $V_{CE} = 15 V$
 25 °C
 125 °C ———
 150 °C - - - -

Typical output characteristics IGBT



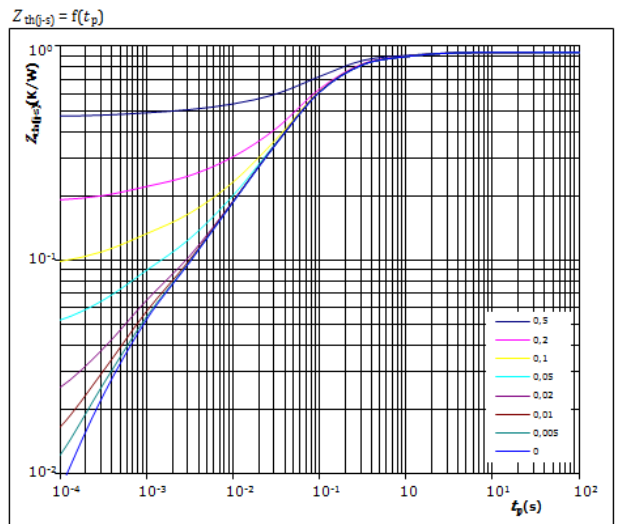
$t_p = 250 \mu s$
 $T_j = 150 \text{ } ^\circ C$
 V_{CE} from 7 V to 17 V in steps of 1 V

Typical transfer characteristics IGBT



$t_p = 100 \mu s$
 $V_{CE} = 10 V$
 25 °C
 125 °C ———
 150 °C - - - -

Transient Thermal Impedance as function of Pulse duration IGBT



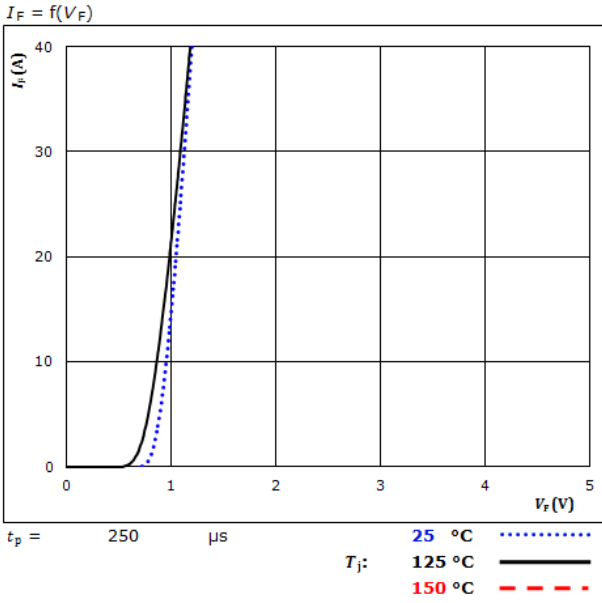
$D = \frac{t_p}{T}$
 $R_{th(j-s)} = 0,94 \text{ K/W}$
 IGBT thermal model values

R_{th} (K/W)	τ (s)
1,15E-01	9,47E-01
4,15E-01	1,24E-01
2,99E-01	4,81E-02
7,22E-02	5,86E-03
3,82E-02	5,62E-04

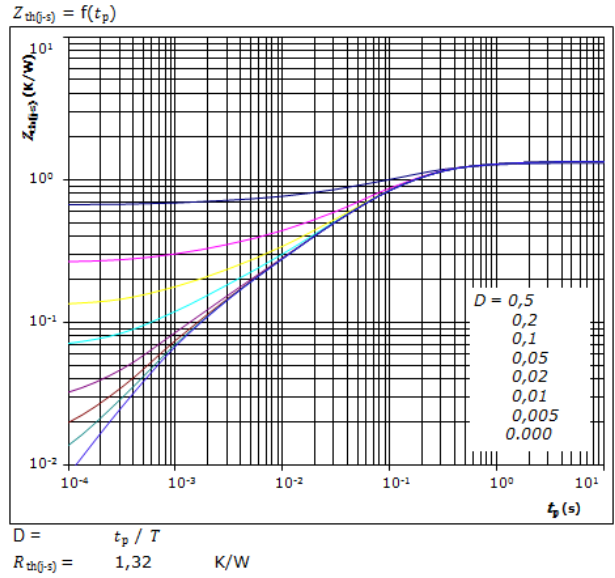


Brake Diode Characteristics

Typical forward characteristics FWD



Transient thermal impedance as a function of pulse width FWD



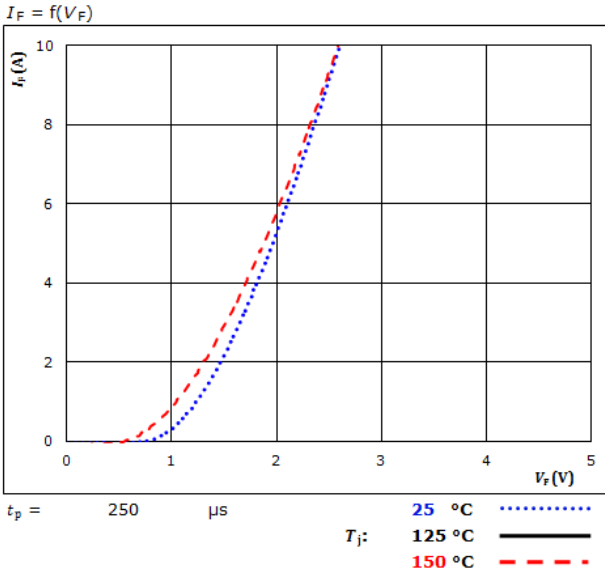
FWD thermal model values

R (K/W)	τ (s)
1,25E-01	9,45E-01
4,95E-01	1,83E-01
4,61E-01	5,96E-02
1,67E-01	9,54E-03
7,07E-02	1,16E-03

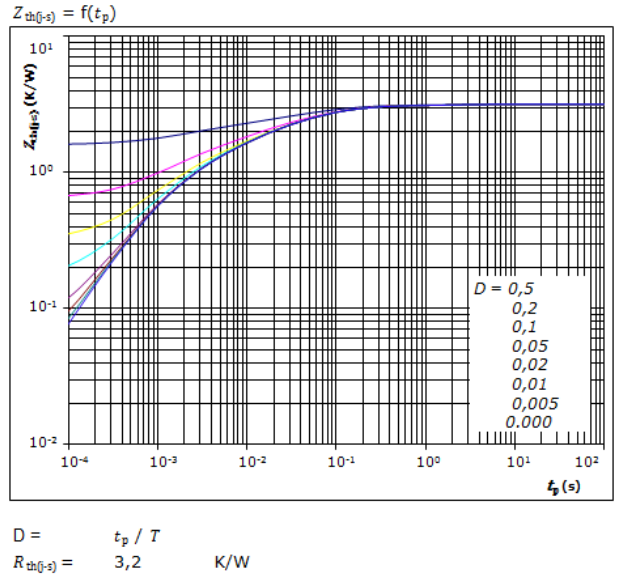


Brake Protection Diode Characteristics

Typical forward characteristics FWD



Transient thermal impedance as a function of pulse width FWD



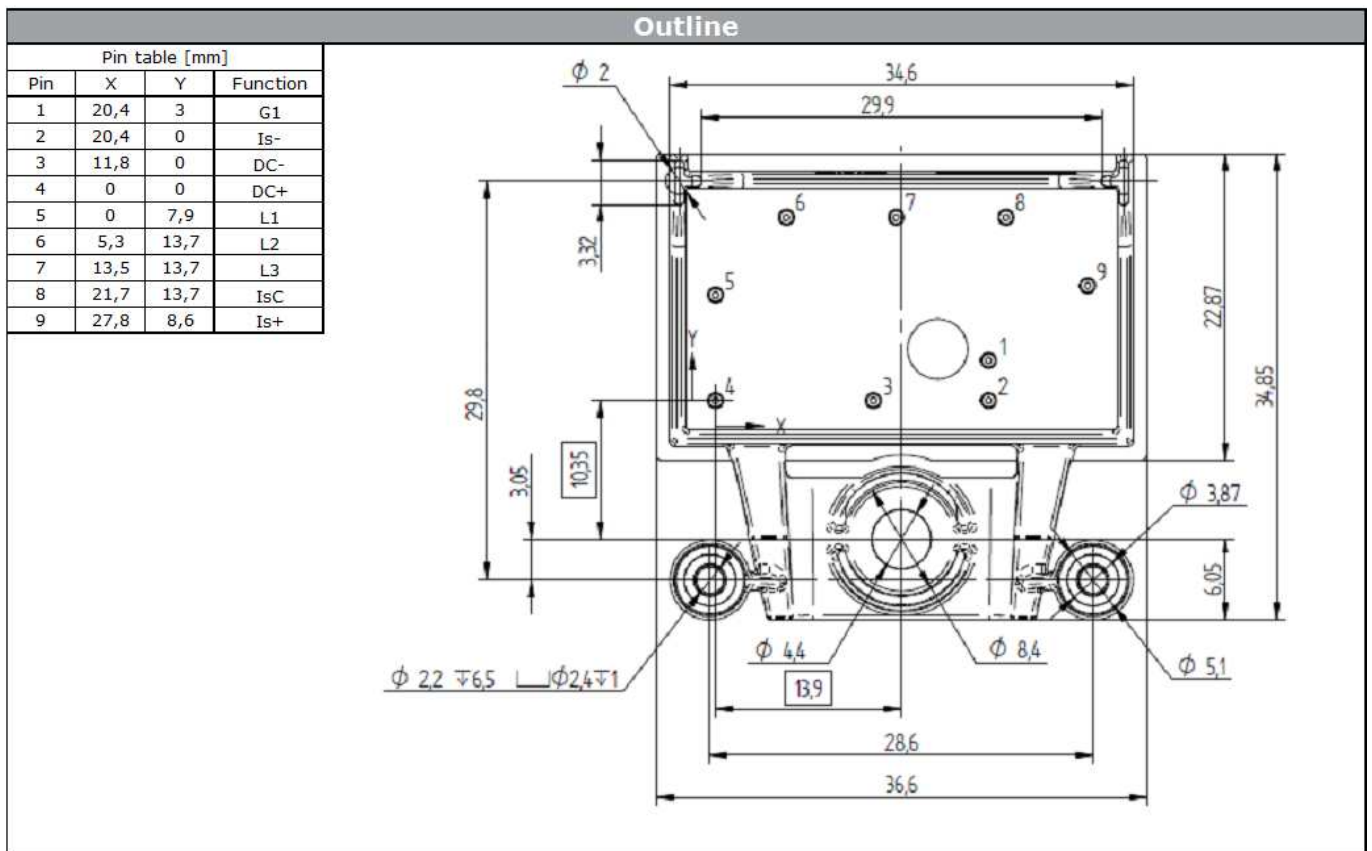
FWD thermal model values

R (K/W)	τ (s)
1,17E-01	1,78E+00
7,00E-01	1,11E-01
1,02E+00	2,47E-02
7,31E-01	4,94E-03
6,12E-01	1,02E-03



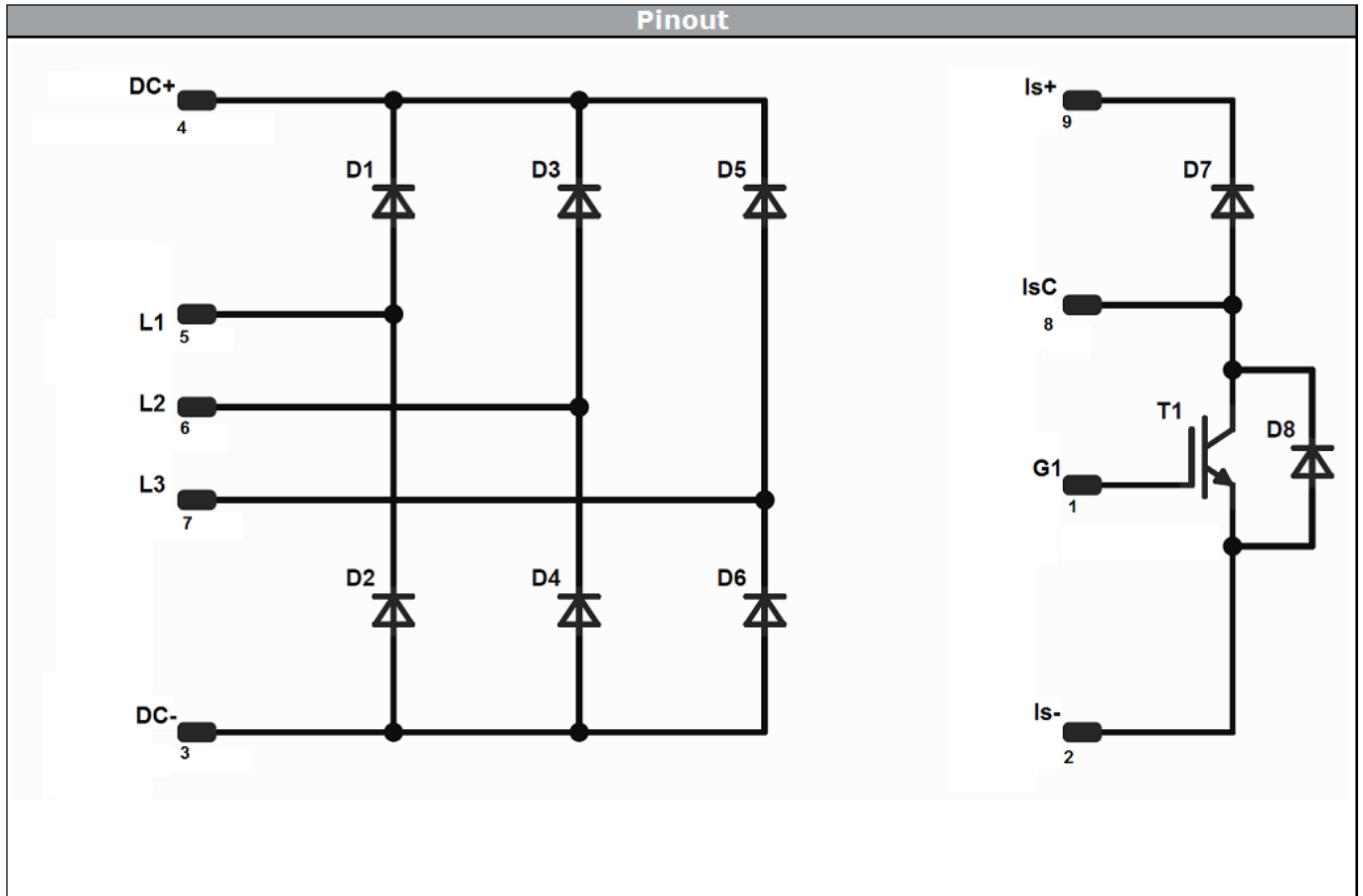
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Ordering Code & Marking							
Version	Ordering Code	in DataMatrix as	in packaging barcode as				
without thermal paste with solder pins	10-OB166BA028SC-M989G09	M989G09	M989G09				
NN-NNNNNNNNN NNNN-TTTTTTV Vinco LLLLL WWYY SSSS UL		Text	Name	Type&Ver	Date code	Vinco&Lot	Serial&UL
		Datamatrix	Type&Ver	Lot number	Serial	Date code	
			NN-NNNNNNNNNNNN	TTTTTTTV	WWYY	Vinco LLLLL	SSSS UL
			TTTTTTTV	LLLLL	SSSS	WWYY	





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Identification					
ID	Component	Voltage	Current	Function	Comment
D1-D6	Diode	1600 V	28 A	Rectifier Diode	
T1	IGBT	1200 V	35 A	Brake Switch	
D7	FWD	1200 V	28 A	Brake Diode	
D8	FWD	1200 V	3 A	Brake Protection Diode	



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Packaging instruction			
Standard packaging quantity (SPQ)	160	>SPQ	Standard
		<SPQ	Sample

Handling instruction
Handling instructions for <i>flow</i> 0 B packages see vincotech.com website.

Document No.:	Date:	Modification:	Pages
10-0B166BA028SC-M989G09-T2-14	18 Nov. 2016	Packaging unit change	12

Product status definition		
Datasheet Status	Product Status	Definition
Target	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice. The data contained is exclusively intended for technically trained staff.

DISCLAIMER
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