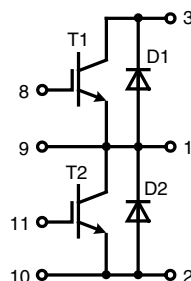


IGBT Module

phaseleg

$$\begin{aligned} I_{C25} &= 280 \text{ A} \\ V_{CES} &= 1200 \text{ V} \\ V_{CE(sat) \text{ typ.}} &= 2.2 \text{ V} \end{aligned}$$

Preliminary data



IGBTs T1 - T2

Symbol	Conditions	Maximum Ratings	
V_{CES}	$T_{VJ} = 25^{\circ}\text{C}$ to 125°C	1200	V
V_{GES}		± 20	V
I_{C25}	$T_C = 25^{\circ}\text{C}$	280	A
I_{C80}	$T_C = 80^{\circ}\text{C}$	200	A
I_{CM}	$V_{GE} = \pm 15 \text{ V}$; $R_G = 7.5 \Omega$; $T_{VJ} = 125^{\circ}\text{C}$	300	A
V_{CEK}	RBSOA Clamped inductive load; $L = 100 \mu\text{H}$	V_{CES}	
t_{SC} (SCSOA)	$V_{CE} = 900 \text{ V}$; $V_{GE} = \pm 15 \text{ V}$; $R_G = 7.5 \Omega$ $T_{VJ} = 125^{\circ}\text{C}$; non-repetitive	10	μs
P_{tot}	$T_C = 25^{\circ}\text{C}$	1100	W

Symbol	Conditions	Characteristic Values			
		$(T_{VJ} = 25^{\circ}\text{C}, \text{ unless otherwise specified})$			
		min.	typ.	max.	
$V_{CE(sat)}$	$I_C = 200 \text{ A}$; $V_{GE} = 15 \text{ V}$; $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		2.2 2.6	2.8	V V
$V_{GE(th)}$	$I_C = 6 \text{ mA}$; $V_{GE} = V_{CE}$	4.5	5.5	6.5	V
I_{CES}	$V_{CE} = V_{CES}$; $V_{GE} = 0 \text{ V}$; $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		0.8 3.5	3.3	mA mA
I_{GES}	$V_{CE} = 0 \text{ V}$; $V_{GE} = \pm 20 \text{ V}$			400	nA
$t_{d(on)}$ t_r $t_{d(off)}$ t_f E_{on} E_{off}	Inductive load, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 600 \text{ V}$; $I_C = 200 \text{ A}$ $V_{GE} = \pm 15 \text{ V}$; $R_G = 7.5 \Omega$		170 60 680 50 29 20		ns ns ns ns mJ mJ
C_{ies}			11		nF
Q_{Gon}			1.16		μC
R_{thJC} R_{thJH}			0.22	0.11	K/W K/W

Features

- NPT³ IGBT
 - low saturation voltage
 - positive temperature coefficient
 - fast switching
 - short tail current for optimized performance in resonant circuits
- HiPerFREDTM diodes
 - fast and soft reverse recovery
 - low operating forward voltage
 - low leakage current
- Package
 - low inductive current path
 - screw connection to high current main terminals
 - use of non interchangeable connectors for auxiliary terminals possible
 - kelvin emitter terminal for easy drive
 - isolated ceramic base plate

Applications

- drives
 - AC
 - DC
- power supplies
 - rectifiers with power factor correction and recuperation capability
 - UPS

Free wheeling diodes D1 - D2

Symbol	Conditions	Maximum Ratings	
I_{F25}	$T_C = 25^\circ\text{C}$	300	A
I_{F80}	$T_C = 80^\circ\text{C}$	190	A

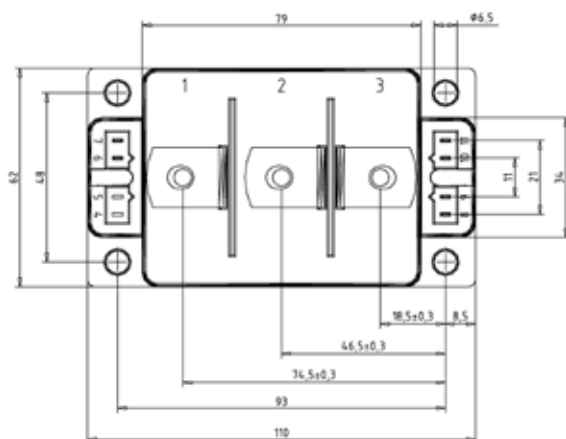
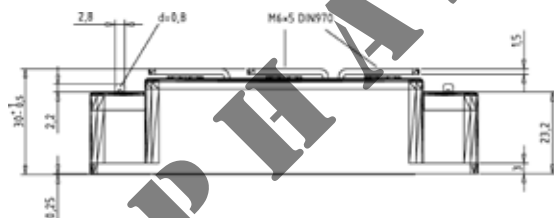
Symbol	Conditions	Characteristic Values			
		min.	typ.	max.	
V_F	I _F = 200 A; V _{GE} = 0 V; T _{VJ} = 25°C T _{VJ} = 125°C		2.3 1.7	2.7	V V
I_{RM} t_{rr}	} I _F = 150 A; di _F /dt = 1500 A/μs; V _R = 600 V; V _{GE} = 0 V; T _{VJ} = 125°C		160 220		A ns
R_{thJC} R_{thJH}		(per IGBT) with heatsink compound		0.45	0.23

Module

Symbol	Conditions	Maximum Ratings	
T_{VJ}	operating	-40...+150	°C
T_{stg}		-40...+125	°C
V_{ISO}	$I_{ISOL} \leq 1 \text{ mA}$; 50/60 Hz	4000	V~
M_d	Mounting torque (module, M6) (terminal, M6)	2.25 - 2.75 4.5 - 5.5	Nm Nm

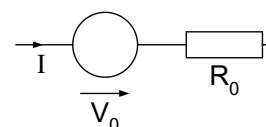
Symbol	Conditions	Characteristic Values		
		min.	typ.	max.
d_s	Creepage distance on surface	2		mm
d_A	Strike distance in air	2		mm
Weight			250	g

Dimensions in mm (1 mm = 0.0394")



Equivalent Circuits for Simulation

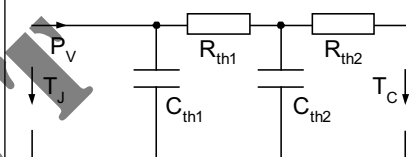
Conduction



IGBT (typ. at $V_{GE} = 15\text{ V}$; $T_J = 125^\circ\text{C}$)
 $V_o = 1.0\text{ V}$; $R_o = 8\text{ m}\Omega$

Free Wheeling Diode D1-D2 (typ. at $T_J = 125^\circ\text{C}$)
 $V_\sigma = 1.3\text{ V}; R_\sigma = 2\text{ m}\Omega$

Thermal Response



IGBT (typ.)
 $C_{th1} = tbd \text{ J/K}; R_{th1} = tbd \text{ K/W}$
 $C_{th2} = tbd \text{ J/K}; R_{th2} = tbd \text{ K/W}$

Free Wheeling Diode D1-D2 (typ.)
 $C_{th1} = tbd \text{ J/K}; R_{th1} = tbd \text{ K/W}$
 $C_{th2} = tbd \text{ J/K}; R_{th2} = tbd \text{ K/W}$

Optional accessories for modules

keyed twin plugs
(UL758, style 1385, CSA class 5851,
guide 460-1-1)

- Type ZY180L with wire length 350mm
 - for pins 4 (yellow wire) and 5 (red wire)
 - for pins 11 (yellow wire) and 10 (red wire)
- Type ZY180R with wire length 350mm
 - for pins 7 (yellow wire) and 6 (red wire)
 - for pins 8 (yellow wire) and 9 (red wire)