

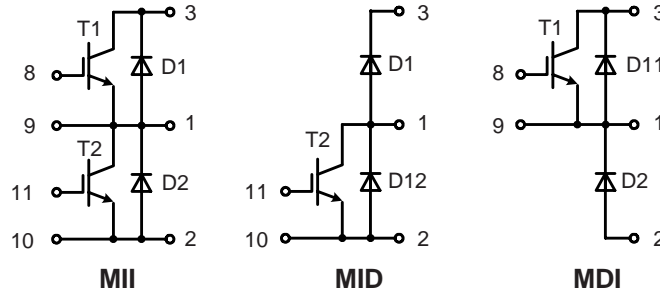
IGBT Module

phaseleg and chopper topologies

MII 400-12E4
MID 400-12E4
MDI 400-12E4

I_{C25} = 420 A
 V_{CES} = 1200 V
 $V_{CE(sat)}$ typ. = 2.2 V

Preliminary



IGBTs T1-T2

Symbol	Conditions	Maximum Ratings	
V_{CES}	$T_{VJ} = 25^{\circ}\text{C}$ to 150°C	1200	V
V_{GES}		± 20	V
I_{C25}	$T_C = 25^{\circ}\text{C}$	420	A
I_{C80}	$T_C = 80^{\circ}\text{C}$	300	A
I_{CM}	$V_{GE} = \pm 15\text{ V}$; $R_G = 4.7\ \Omega$; $T_{VJ} = 125^{\circ}\text{C}$	450	A
V_{CEK}	RBSOA , Clamped inductive load; $L = 100\ \mu\text{H}$	V_{CES}	
t_{SC} (SCSOA)	$V_{CE} = 900\text{ V}$; $V_{GE} = \pm 15\text{ V}$; $R_G = 4.7\ \Omega$; $T_{VJ} = 125^{\circ}\text{C}$ non repetitive	10	μs
P_{tot}	$T_C = 25^{\circ}\text{C}$	1700	W

Features

- IGBT
 - low saturation voltage
 - positive temperature coefficient
 - fast switching
 - short tail current for optimized performance in resonant circuits
- HiPerFRED™ 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

Symbol	Conditions	Characteristic Values ($T_{VJ} = 25^{\circ}\text{C}$, unless otherwise specified)			
		min.	typ.	max.	
$V_{CE(sat)}$	$I_C = 300\text{ A}$; $V_{GE} = 15\text{ V}$; $T_{VJ} = 25^{\circ}\text{C}$ $T_{VJ} = 125^{\circ}\text{C}$		2.2 2.6	V V	
$V_{GE(th)}$	$I_C = 10\text{ mA}$; $V_{GE} = V_{CE}$	4.5		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	mA mA	
I_{GES}	$V_{CE} = 0\text{ V}$; $V_{GE} = \pm 20\text{ V}$			600 nA	
$t_{d(on)}$ t_r $t_{d(off)}$ t_f	Inductive load, $T_{VJ} = 125^{\circ}\text{C}$ $V_{CE} = 600\text{ V}$; $I_C = 300\text{ A}$ $V_{GE} = \pm 15\text{ V}$; $R_G = 4.7\ \Omega$		150 60 680 50	ns ns ns ns	
E_{on}			36	mJ	
E_{off}			30	mJ	
C_{ies}		$V_{CE} = 25\text{ V}$; $V_{GE} = 0\text{ V}$; $f = 1\text{ MHz}$		17	nF
Q_{Gon}		$V_{CE} = 600\text{ V}$; $V_{GE} = 15\text{ V}$; $I_C = 300\text{ A}$		2.25	μC
R_{thJC} R_{thJH}	(per IGBT) with heatsink compound		0.15	0.08 K/W K/W	

Applications

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

