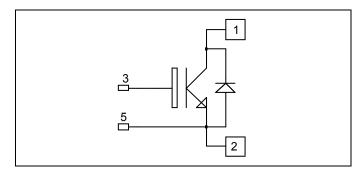


Single switch
Trench + Field Stop IGBT
Power Module

$$V_{CES} = 1200V$$

 $I_{C} = 600A @ Tc = 80^{\circ}C$



Application

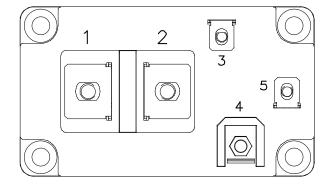
- Welding converters
- Switched Mode Power Supplies
- Uninterruptible Power Supplies
- Motor control

Features

- Trench + Field Stop IGBT Technology
 - Low voltage drop
 - Low tail current
 - Switching frequency up to 20 kHz
 - Soft recovery parallel diodes
 - Low diode VF
 - Low leakage current
 - RBSOA and SCSOA rated
- Kelvin emitter for easy drive
- M6 connectors for power
- M4 connectors for signal
- High level of integration

Benefits

- Stable temperature behavior
- Very rugged
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Easy paralleling due to positive T_C of V_{CEsat}
- RoHS Compliant



Absolute maximum ratings

Symbol	Parameter		Max ratings	Unit
V_{CES}	Collector - Emitter Breakdown Voltage		1200	V
T	Continuous Collector Current	$T_C = 25^{\circ}C$	900	
I_{C}	Continuous Conector Current	$T_C = 80$ °C	600	A
I_{CM}	Pulsed Collector Current	$T_C = 25^{\circ}C$	1200	
V_{GE}	Gate – Emitter Voltage		±20	V
P_{D}	Maximum Power Dissipation	$T_C = 25$ °C	2500	W
RBSOA	Reverse Bias Safe Operating Area	$T_j = 125^{\circ}C$	1200A@1050V	

CAUTION: These Devices are sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed. See application note APT0502 on www.microsemi.com



All ratings @ $T_j = 25^{\circ}C$ unless otherwise specified

Electrical Characteristics

Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit
I_{CES}	Zero Gate Voltage Collector Current	$V_{GE} = 0V, V_{CE} = 1200V$				5	mA
V	Collector Emitter saturation Voltage	$V_{GE} = 15V$	$T_j = 25$ °C		1.7	2.1	V
$V_{CE(sat)}$		$I_{\rm C} = 600 {\rm A}$ $T_{\rm j} = 125 {\rm °C}$	$T_j = 125$ °C		2.0		·
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE} = V_{CE}$, $I_C = 24mA$		5.0	5.8	6.5	V
I_{GES}	Gate – Emitter Leakage Current	$V_{GE} = 20V, V_{CE} = 0V$				400	nA

Dynamic Characteristics

•	Characteristic	Test Conditions	Min	Тур	Max	Unit
Cies	Input Capacitance	$V_{GE} = 0V$		43		
C_{oes}	Output Capacitance	$V_{CE} = 25V$		2.25		nF
C_{res}	Reverse Transfer Capacitance	f = 1MHz		2		
Q_{G}	Gate charge	V _{GE} =±15V, I _C =600A V _{CE} =600V		5.6		μС
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (25°C)		280		
$T_{\rm r}$	Rise Time	$V_{GE} = \pm 15V$		90		
$T_{d(off)}$	Turn-off Delay Time	$V_{Bus} = 600V$ $I_{C} = 600A$		550		ns
T_{f}	Fall Time	$R_G = 1.2\Omega$		130		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (125°C)		300		
$T_{\rm r}$	Rise Time	$V_{GE} = \pm 15V$		100		***
$T_{d(off)}$	Turn-off Delay Time	$V_{Bus} = 600V$ - $I_{C} = 600A$		650		ns
T_{f}	Fall Time	$R_G = 1.2\Omega$		180		
Eon	Turn on Energy	$V_{GE} = \pm 15V V_{Bus} = 600V$ $T_j = 125^{\circ}C$		50		m I
E_{off}	Turn off Energy	$I_C = 600A$ $R_G = 1.2\Omega$ $T_j = 125^{\circ}C$		88		mJ
I_{sc}	Short Circuit data	$V_{GE} \le 15V$; $V_{Bus} = 900V$ $t_p \le 10 \mu s$; $T_j = 125^{\circ}C$		2400		A

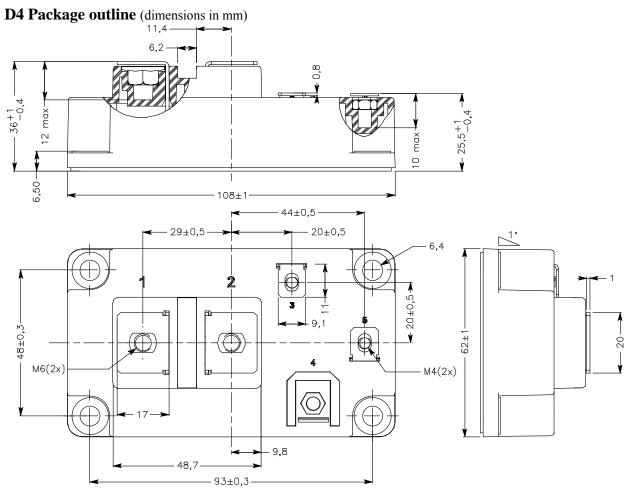
Reverse diode ratings and characteristics

	Characteristic	Test Conditions		Min	Typ	Max	Unit
V_{RRM}	Maximum Peak Repetitive Reverse Voltage			1200			V
I_{RRM}	Maximum Reverse Leakage Current	V _R =1200V	$T_i = 25$ °C $T_i = 125$ °C			750 1000	μΑ
I_{F}	DC Forward Current		$Tc = 80^{\circ}C$		600		A
V_{F}	Diode Forward Voltage	$I_F = 600A$	$T_i = 25^{\circ}C$		1.6	2.1	V
V F		$V_{GE} = 0V$	$T_{i} = 125^{\circ}C$		1.6		V
+	Davaga Daaayam Tima	T	$T_j = 25^{\circ}C$		250		na
t_{rr}	Reverse Recovery Time		$T_j = 125$ °C		350		ns
0	Q_{rr} Reverse Recovery Charge $I_F = 600A$ $V_R = 600V$ $di/dt = 7000A/us$	$T_j = 25$ °C		60		C	
Qrr		$V_R = 600 V$ di/dt = $7000 A/\mu s$	$T_{j} = 125^{\circ}C$		115		μС
Е	D D E	, 00012 700	$T_j = 25^{\circ}C$		28		I
E_{rr}	Reverse Recovery Energy		$T_{\rm j} = 125^{\circ}{\rm C}$		52		mJ



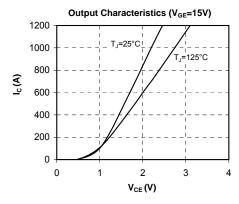
Thermal and package characteristics

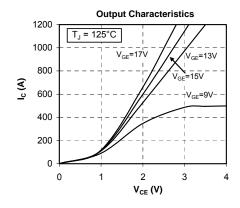
Symbol	Characteristic		Min	Тур	Max	Unit
R_{thJC}	Junction to Case Thermal Resistance	IGBT			0.05	°C/W
T _{th} JC		Diode			0.075	
V_{ISOL}	RMS Isolation Voltage, any terminal to case t =1 min, I isol<1mA, 50/60Hz		2500			V
$T_{\rm J}$	Operating junction temperature range		-40		150	
T_{STG}	Storage Temperature Range		-40		125	°C
T_{C}	Operating Case Temperature		-40		125	
Torque	Mounting torque	M6	3		5	N.m
		M4	1		2	11.111
Wt	Package Weight				350	g

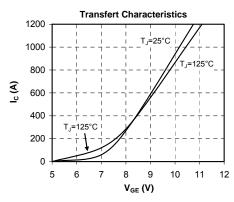


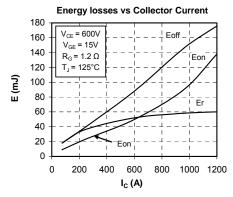


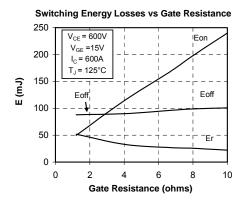
Typical Performance Curve

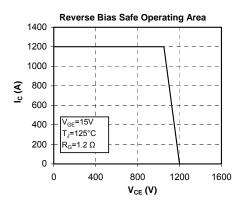


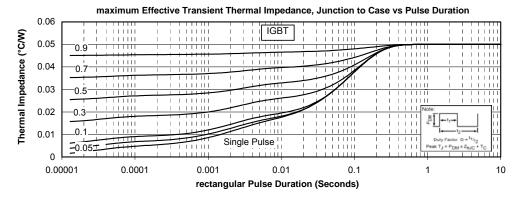




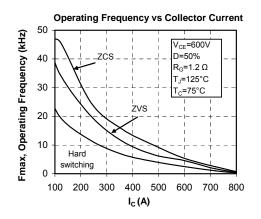


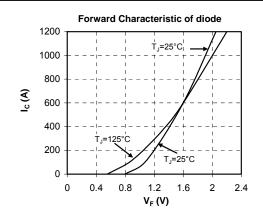


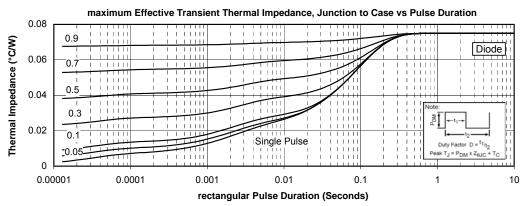












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