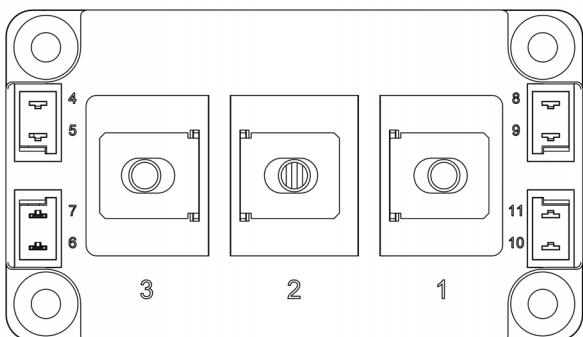
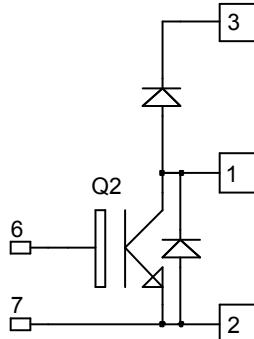


**Boost chopper
Trench + Field Stop IGBT3
Power Module**

**$V_{CES} = 1200V$
 $I_C = 200A @ T_c = 80^\circ C$**



Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{CES}	Collector - Emitter Breakdown Voltage	1200	V
I_C	Continuous Collector Current	$T_c = 25^\circ C$	A
		$T_c = 80^\circ C$	
I_{CM}	Pulsed Collector Current	$T_c = 25^\circ C$	400
V_{GE}	Gate – Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	1050
RBSOA	Reverse Bias Safe Operating Area	$T_j = 125^\circ C$	400A @ 1100V

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

Application

- AC and DC motor control
- Switched Mode Power Supplies
- Power Factor Correction

Features

- Trench + Field Stop IGBT3 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
- High level of integration
- M6 power connectors

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

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

Electrical Characteristics

Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit
I_{CES}	Zero Gate Voltage Collector Current	$V_{GE} = 0\text{V}$, $V_{CE} = 1200\text{V}$				500	μA
$V_{CE(\text{sat})}$	Collector Emitter saturation Voltage	$V_{GE} = 15\text{V}$	$T_j = 25^\circ\text{C}$	1.4	1.7	2.1	V
		$I_C = 200\text{A}$	$T_j = 125^\circ\text{C}$		2.0		
$V_{GE(\text{th})}$	Gate Threshold Voltage	$V_{GE} = V_{CE}$, $I_C = 8\text{mA}$		5.0	5.8	6.5	V
I_{GES}	Gate – Emitter Leakage Current	$V_{GE} = 20\text{V}$, $V_{CE} = 0\text{V}$				400	nA

Dynamic Characteristics

Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit
C_{ies}	Input Capacitance	$V_{GE} = 0\text{V}$, $V_{CE} = 25\text{V}$ $f = 1\text{MHz}$		14			nF
C_{rss}	Reverse Transfer Capacitance			0.6			
Q_G	Gate charge	$V_{GE} = \pm 15\text{V}$, $I_C = 200\text{A}$ $V_{CE} = 600\text{V}$			1.9		μC
$T_{d(on)}$	Turn-on Delay Time	<p>Inductive Switching (25°C)</p> <p>$V_{GE} = \pm 15\text{V}$</p> <p>$V_{Bus} = 600\text{V}$</p> <p>$I_C = 200\text{A}$</p> <p>$R_G = 3.6\Omega$</p>		250			ns
T_r	Rise Time			90			
$T_{d(off)}$	Turn-off Delay Time			550			
T_f	Fall Time			130			
$T_{d(on)}$	Turn-on Delay Time	<p>Inductive Switching (125°C)</p> <p>$V_{GE} = \pm 15\text{V}$</p> <p>$V_{Bus} = 600\text{V}$</p> <p>$I_C = 200\text{A}$</p> <p>$R_G = 3.6\Omega$</p>		300			ns
T_r	Rise Time			100			
$T_{d(off)}$	Turn-off Delay Time			650			
T_f	Fall Time			180			
E_{on}	Turn on Energy	$V_{GE} = \pm 15\text{V}$ $V_{Bus} = 600\text{V}$ $I_C = 200\text{A}$ $R_G = 3.6\Omega$	$T_j = 125^\circ\text{C}$		15		mJ
E_{off}	Turn off Energy		$T_j = 125^\circ\text{C}$		35		
I_{sc}	Short Circuit data	$V_{GE} \leq 15\text{V}$; $V_{Bus} = 900\text{V}$ $t_p \leq 10\mu\text{s}$; $T_j = 125^\circ\text{C}$			800		A

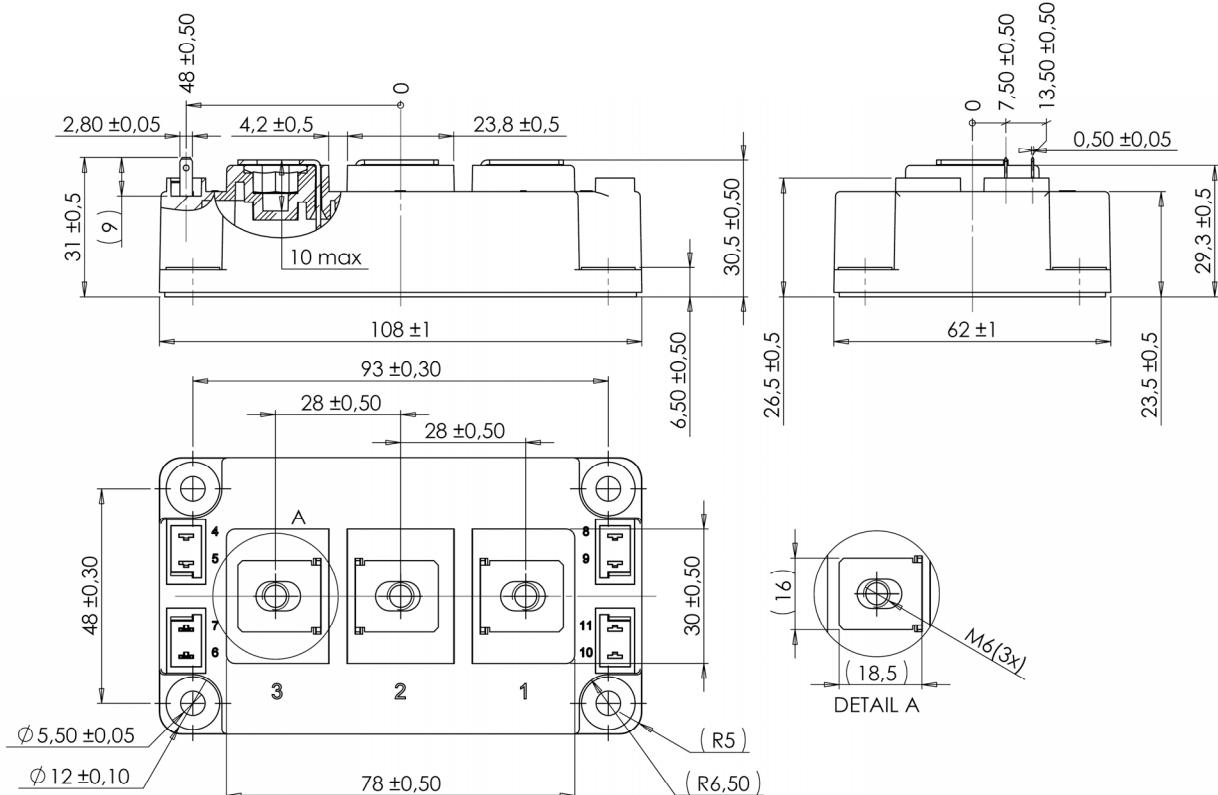
Reverse diode ratings and characteristics

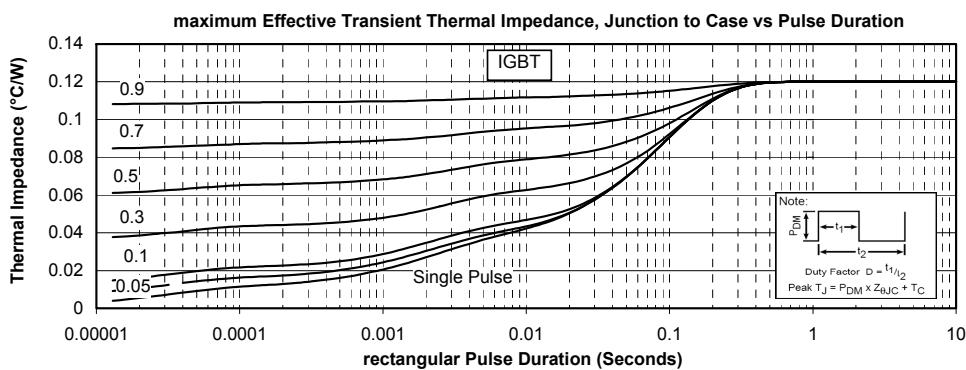
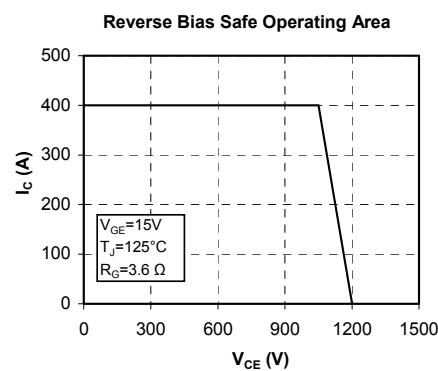
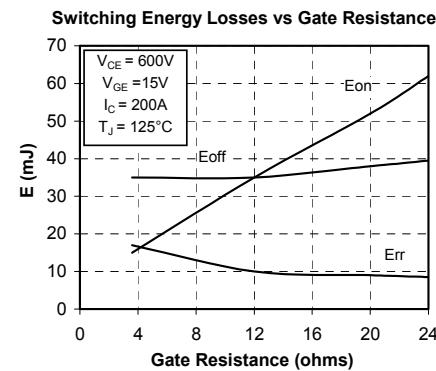
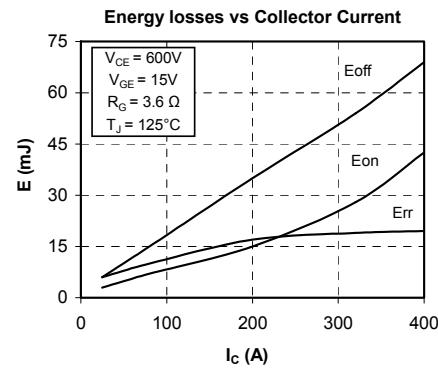
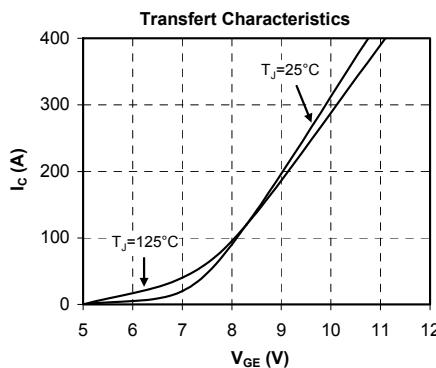
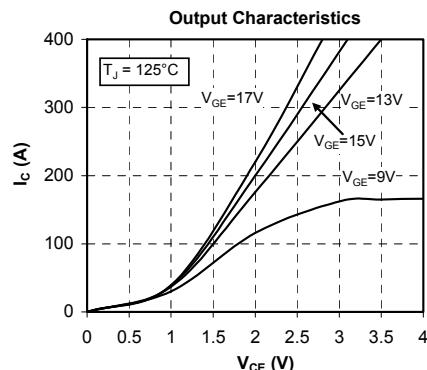
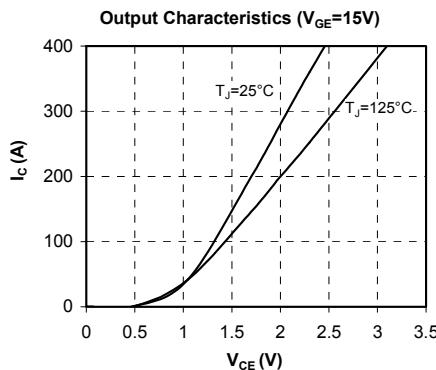
Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit	
V_{RRM}	Maximum Peak Repetitive Reverse Voltage	$V_R = 1200\text{V}$		1200			V	
I_{RRM}	Maximum Reverse Leakage Current		$T_j = 25^\circ\text{C}$			750	μA	
			$T_j = 125^\circ\text{C}$			1000		
I_F	DC Forward Current		$T_c = 80^\circ\text{C}$		200		A	
V_F	Diode Forward Voltage	$I_F = 200\text{A}$ $V_{GE} = 0\text{V}$	$T_j = 25^\circ\text{C}$		1.6	2.1	V	
			$T_j = 125^\circ\text{C}$		1.6			
t_{rr}	Reverse Recovery Time	$I_F = 200\text{A}$ $V_R = 600\text{V}$ $di/dt = 3500\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		170		ns	
			$T_j = 125^\circ\text{C}$		280			
Q_{rr}	Reverse Recovery Charge		$T_j = 25^\circ\text{C}$		22		μC	
			$T_j = 125^\circ\text{C}$		40			
E_{rr}	Reverse Recovery Energy		$T_j = 25^\circ\text{C}$		9		mJ	
			$T_j = 125^\circ\text{C}$		16			

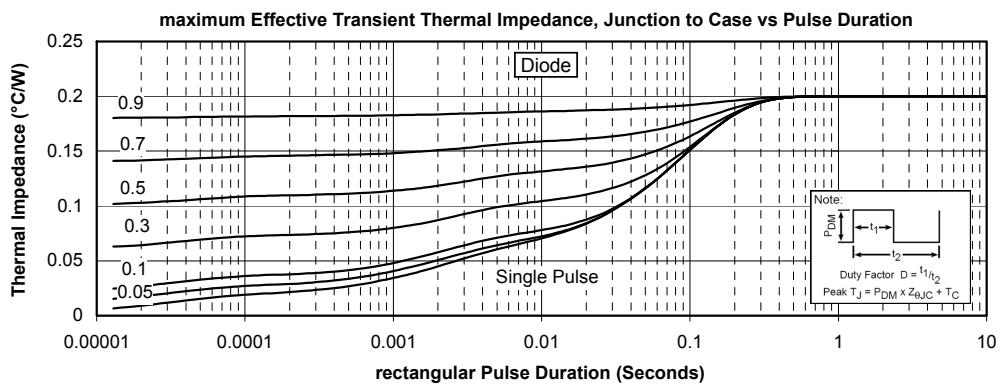
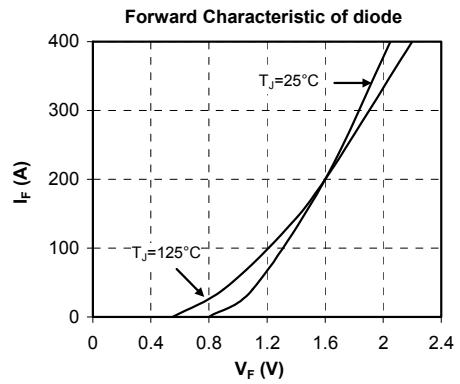
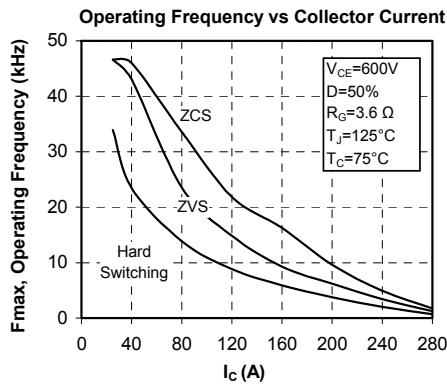
Thermal and package characteristics

Symbol	Characteristic		Min	Typ	Max	Unit
R_{thJC}	Junction to Case Thermal Resistance	IGBT			0.12	°C/W
		Diode			0.20	
V_{ISOL}	RMS Isolation Voltage, any terminal to case t=1 min, 50/60Hz		4000			V
T_J	Operating junction temperature range		-40		150	°C
T_{STG}	Storage Temperature Range		-40		125	
T_C	Operating Case Temperature		-40		125	
Torque	Mounting torque	For terminals	M6	3	5	N.m
		To Heatsink	M6	3	5	
Wt	Package Weight				350	g

D3 Package outline (dimensions in mm)



Typical Performance Curve




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