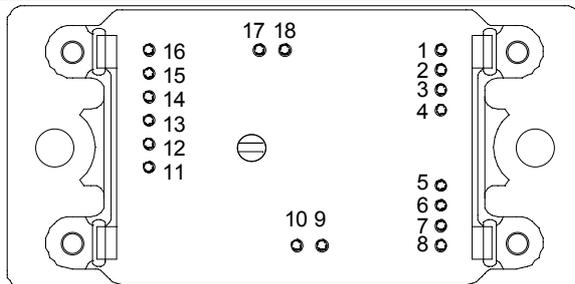
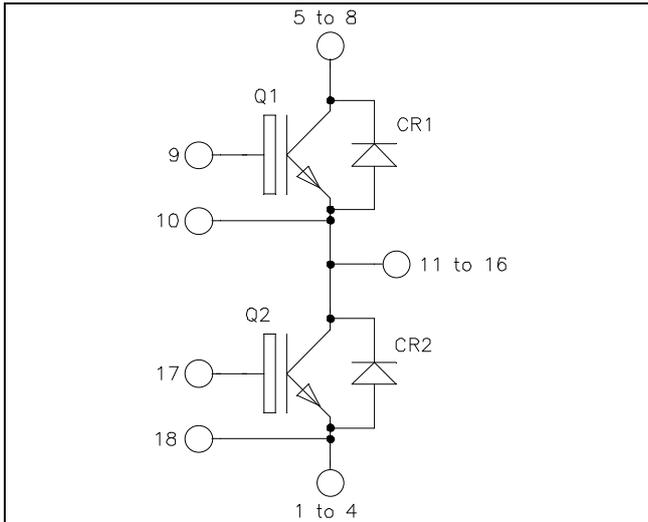


**Phase leg
Trench + Field Stop IGBT4
Power Module**

**$V_{CES} = 1200V$
 $I_C = 180A @ T_c = 80^\circ C$**



Pins 1/2/3/4 ; 5/6/7/8 ; 11/12/13/14/15/16 must be shorted together

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

Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{CES}	Collector - Emitter Breakdown Voltage	1200	V
I_C	Continuous Collector Current	$T_c = 25^\circ C$	220
		$T_c = 80^\circ C$	180
I_{CM}	Pulsed Collector Current	$T_c = 25^\circ C$	300
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	750
RBSOA	Reverse Bias Safe Operating Area	$T_j = 125^\circ C$	300A @ 1100V

Application

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

Features

- Trench + Field Stop IGBT 4 Technology
 - Low voltage drop
 - Low leakage current
 - Low switching losses
 - Soft recovery parallel diodes
 - Low diode VF
 - RBSOA and SCSOA rated
- Kelvin emitter for easy drive
- Very low stray inductance
- High level of integration

Benefits

- Outstanding performance at high frequency operation
- 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

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

Electrical Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
I _{CES}	Zero Gate Voltage Collector Current	V _{GE} = 0V, V _{CE} = 1200V			300	μA
V _{CE(sat)}	Collector Emitter saturation Voltage	V _{GE} = 15V I _C = 150A		1.8 2.2	2.2	V
V _{GE(th)}	Gate Threshold Voltage	V _{GE} = V _{CE} , I _C = 5.5 mA	5.0	5.8	6.5	V
I _{GES}	Gate – Emitter Leakage Current	V _{GE} = 20V, V _{CE} = 0V			200	nA

Dynamic Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C _{ies}	Input Capacitance	V _{GE} = 0V		9.3		nF
C _{oes}	Output Capacitance	V _{CE} = 25V		0.58		
C _{res}	Reverse Transfer Capacitance	f = 1MHz		0.5		
Q _G	Gate charge	V _{GE} = -8V / 15V ; V _{CE} = 600V I _C = 150A		0.85		μC
T _{d(on)}	Turn-on Delay Time	Inductive Switching (25°C) V _{GE} = ±15V V _{CE} = 600V I _C = 150A R _G = 3Ω		130		ns
T _r	Rise Time			20		
T _{d(off)}	Turn-off Delay Time			300		
T _f	Fall Time			45		
T _{d(on)}	Turn-on Delay Time	Inductive Switching (150°C) V _{GE} = ±15V V _{CE} = 600V I _C = 150A R _G = 3Ω		150		ns
T _r	Rise Time			35		
T _{d(off)}	Turn-off Delay Time			350		
T _f	Fall Time			80		
E _{on}	Turn-on Switching Energy	V _{GE} = ±15V V _{CE} = 600V I _C = 150A		13.5		mJ
E _{off}	Turn-off Switching Energy	R _G = 3Ω		14.5		mJ
I _{sc}	Short Circuit data	V _{GE} ≤ 15V ; V _{Bus} = 900V t _p ≤ 10μs ; T _j = 150°C		600		A
R _{thJC}	Junction to Case Thermal Resistance				0.20	°C/W

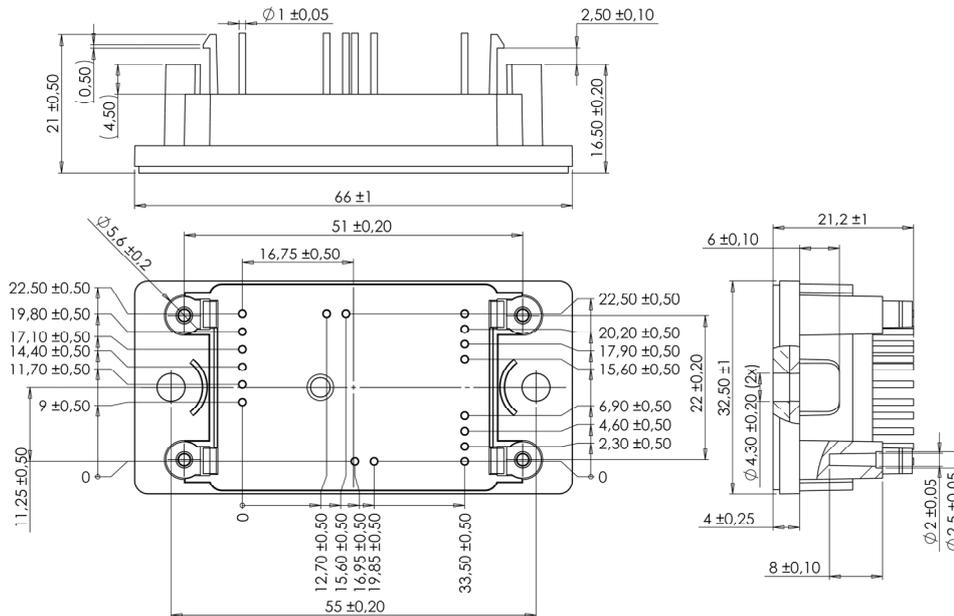
Reverse diode ratings and characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V _{RRM}	Maximum Peak Repetitive Reverse Voltage		1200			V
I _{RM}	Maximum Reverse Leakage Current	V _R = 1200V			100	μA
I _F	DC Forward Current			150		A
V _F	Diode Forward Voltage	I _F = 150A V _{GE} = 0V		1.7	2.2	V
			T _c = 80°C		1.65	
t _{rr}	Reverse Recovery Time	I _F = 150A	T _j = 25°C	155		ns
			T _j = 150°C	300		
Q _{rr}	Reverse Recovery Charge	V _R = 600V di/dt = 3400A/μs	T _j = 25°C	13.3		μC
			T _j = 150°C	27.6		
E _{rr}	Reverse Recovery Energy	I _F = 150A	T _j = 25°C	5.9		mJ
			T _j = 150°C	11.5		
R _{thJC}	Junction to Case Thermal Resistance				0.38	°C/W

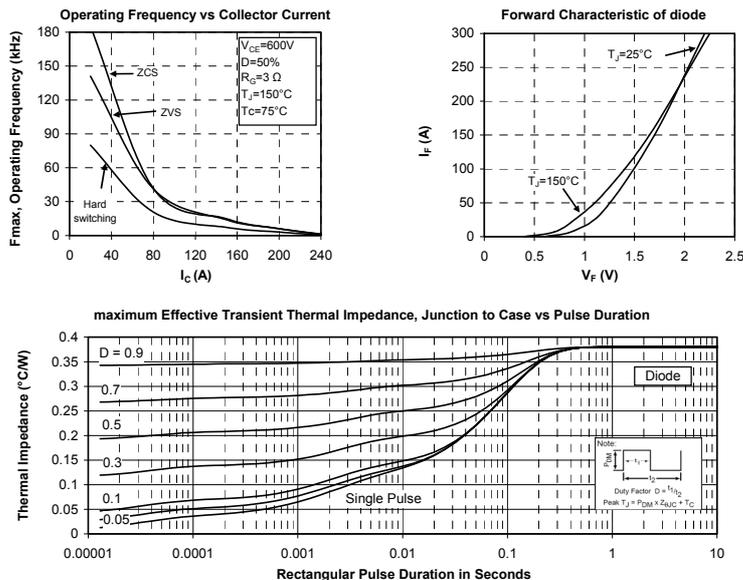
Thermal and package characteristics

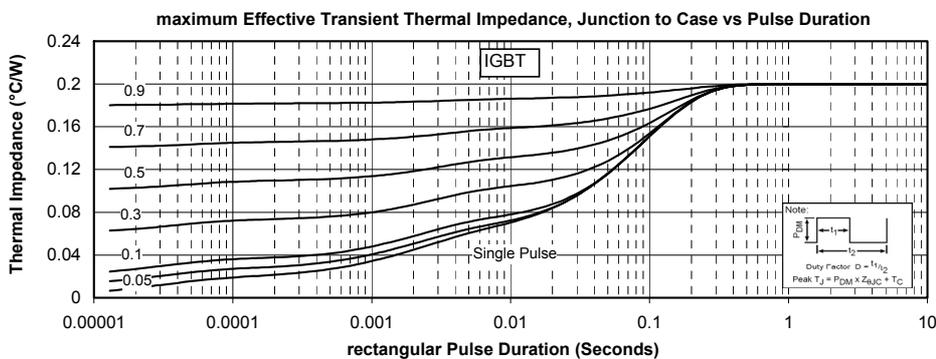
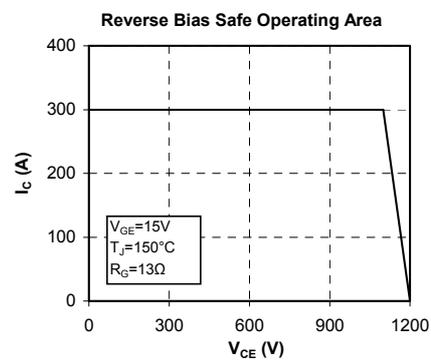
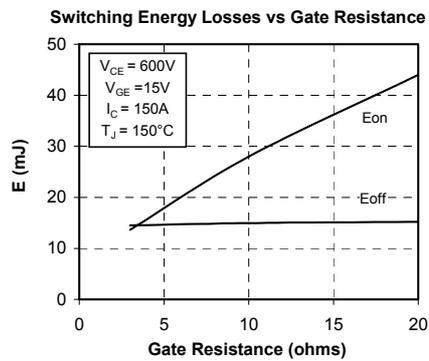
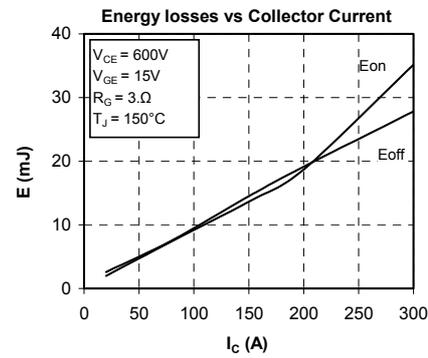
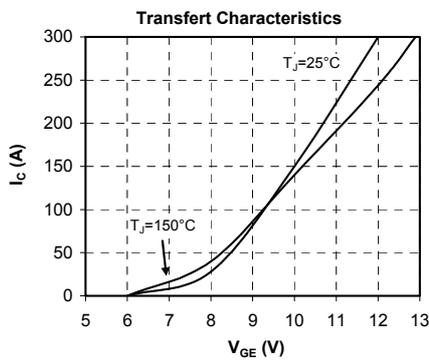
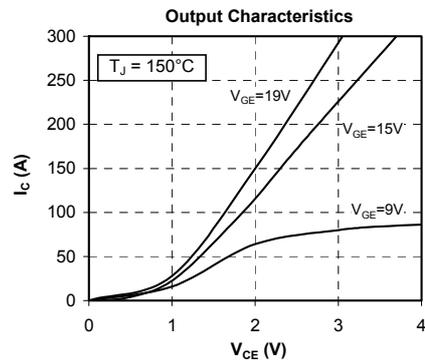
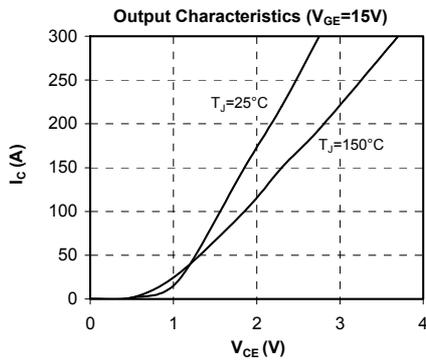
Symbol	Characteristic	Min	Typ	Max	Unit	
V_{ISOL}	RMS Isolation Voltage, any terminal to case $t=1$ min, 50/60Hz	4000			V	
T_J	Operating junction temperature range	-40		175	°C	
T_{STG}	Storage Temperature Range	-40		125		
T_C	Operating Case Temperature	-40		100		
Torque	Mounting torque	To heatsink	M4	2	3	N.m
Wt	Package Weight				75	g

SP2 Package outline (dimensions in mm)



Typical Performance Curve





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