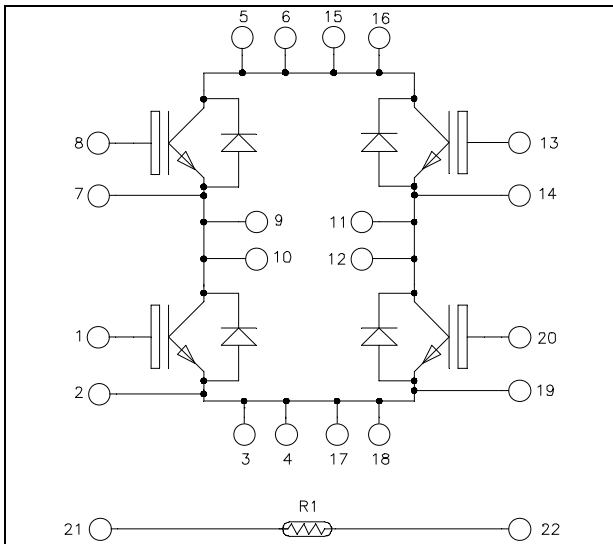


Full - Bridge NPT IGBT Power Module

$V_{CES} = 1200V$
 $I_C = 25A @ T_c = 80^\circ C$

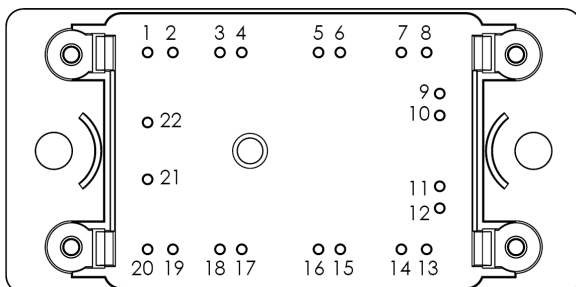


Application

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

Features

- Fieldstop IGBT
 - Low voltage drop
 - short tail current
 - Switching frequency up to 50 kHz
 - Soft recovery parallel diodes
 - Low diode VF
 - Low leakage current
 - RBSOA and SCSOA rated
- Very low stray inductance
- Internal thermistor for temperature monitoring
- High level of integration



Benefits

- Outstanding performance at high frequency operation
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Solderable terminals both for power and signal for easy PCB mounting
- Low profile
- RoHS Compliant

Pins 5/6/15/16 ; 3/4/17/18 ; 9/10 ; 11/12 must be shorted together

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

Absolute maximum ratings (per IGBT)

Symbol	Parameter	Max ratings	Unit
V_{CES}	Collector - Emitter Breakdown Voltage	1200	V
I_C	Continuous Collector Current	$T_C = 25^\circ C$	40
		$T_C = 80^\circ C$	25
I_{CM}	Pulsed Collector Current	$T_C = 25^\circ C$	50
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_C = 25^\circ C$	227
RBSOA	Reverse Bias Safe Operating Area	$T_j = 125^\circ C$	50A@1150V

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

Electrical Characteristics (per IGBT)

<i>Symbol</i>	<i>Characteristic</i>	<i>Test Conditions</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>
I_{CES}	Zero Gate Voltage Collector Current	$V_{GE} = 0V ; V_{CE} = 1200V$			250	μA
$V_{CE(sat)}$	Collector Emitter saturation Voltage	$V_{GE} = 15V$ $I_C = 25A$		2.1		V
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE} = V_{CE}, I_C = 1mA$	3	5.5	7	V
I_{GES}	Gate – Emitter Leakage Current	$V_{GE} = 20V, V_{CE} = 0V$			150	nA

Dynamic Characteristics (per IGBT)

<i>Symbol</i>	<i>Characteristic</i>	<i>Test Conditions</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>
C_{ies}	Input Capacitance	$V_{GE} = 0V$		2.02		nF
C_{oes}	Output Capacitance	$V_{CE} = 25V$		0.19		
C_{res}	Reverse Transfer Capacitance	$f = 1MHz$		0.06		
Q_G	Gate charge	$V_{GE} = -8/20V, I_C = 25A$ $V_{CE} = 600V$		280		nC
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (125°C) $V_{GE} = 15V$ $V_{Bus} = 600V$ $I_C = 25A$ $R_G = 16\Omega$		60		ns
T_r	Rise Time			50		
$T_{d(off)}$	Turn-off Delay Time			346		
T_f	Fall Time			40		
E_{on}	Turn-on Switching Energy	$V_{GE} = 15V$ $V_{Bus} = 600V$		1.35		mJ
E_{off}	Turn-off Switching Energy	$I_C = 25A$ $R_G = 16\Omega$		1.76		
I_{sc}	Short Circuit data	$V_{GE} \leq 15V ; V_{Bus} = 900V$ $t_p \leq 10\mu s ; T_j = 125^\circ C$		125		A
R_{thJC}	Junction to Case Thermal Resistance				0.55	$^\circ C/W$

Reverse diode ratings and characteristics (per diode)

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	T _c = 80°C		25		A
V _F	Diode Forward Voltage	I _F = 25A		2.6	3.1	V
		I _F = 50A		3.2		
		I _F = 25A	T _j = 125°C	1.8		
t _{rr}	Reverse Recovery Time	I _F = 25A V _R = 667V di/dt = 200A/μs	T _j = 25°C	320		ns
			T _j = 125°C	360		
Q _{rr}	Reverse Recovery Charge	I _F = 25A V _R = 667V di/dt = 200A/μs	T _j = 25°C	480		nC
			T _j = 125°C	1800		
R _{thJC}	Junction to Case Thermal Resistance				1.4	°C/W

Temperature sensor NTC

Symbol	Characteristic	Min	Typ	Max	Unit
R ₂₅	Resistance @ 25°C		22		kΩ
ΔR ₂₅ /R ₂₅	Resistance tolerance			5	%
ΔB/B	Beta tolerance			3	
B _{25/100}	T ₂₅ = 298.16 K		3980		K

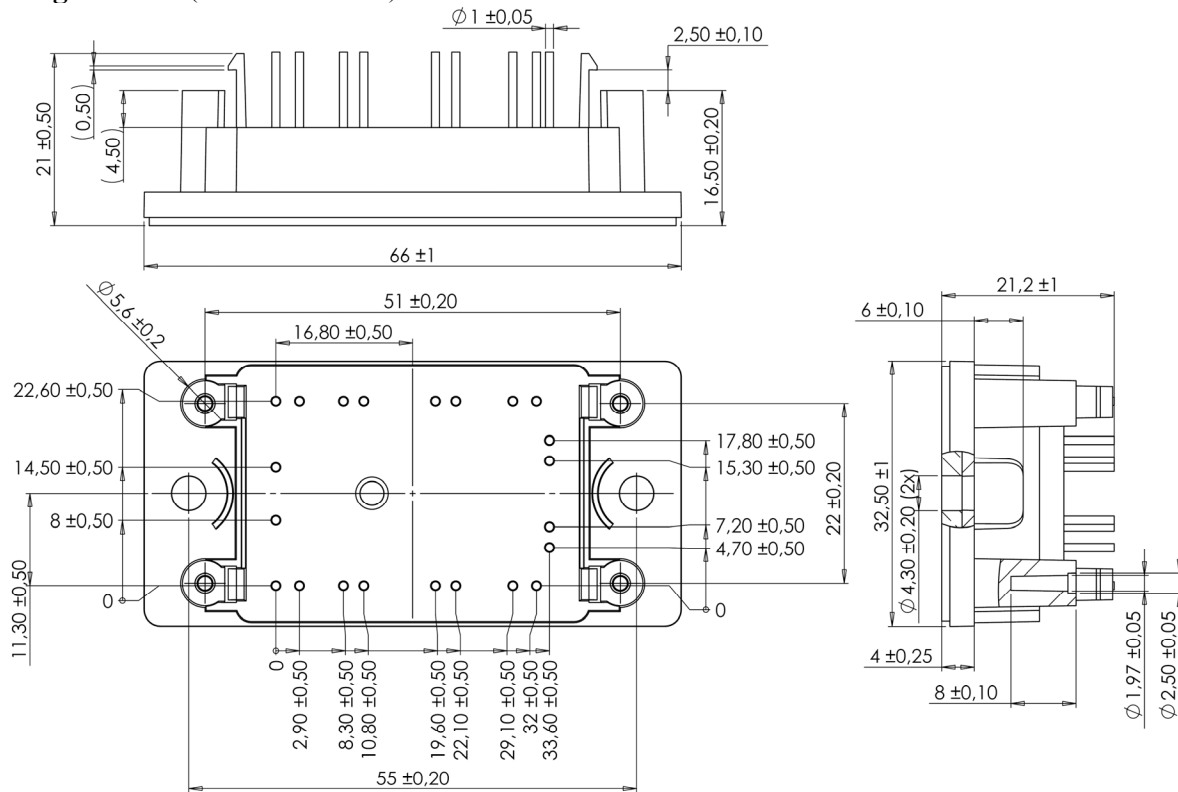
$$R_T = \frac{R_{25}}{\exp\left[B_{25/100} \left(\frac{1}{T_{25}} - \frac{1}{T}\right)\right]}$$

T: Thermistor temperature
R_T: Thermistor value at T

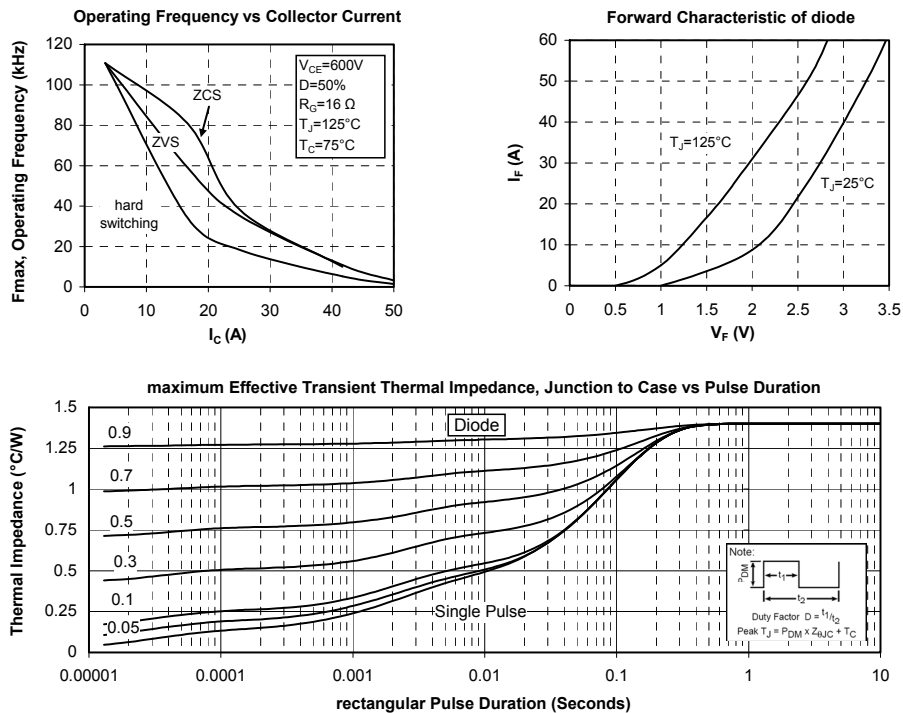
Thermal and package characteristics

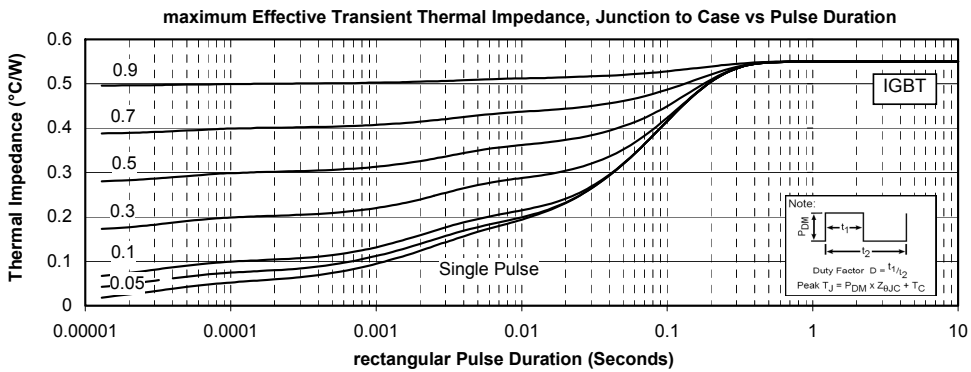
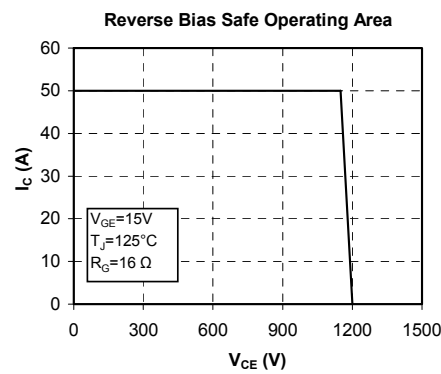
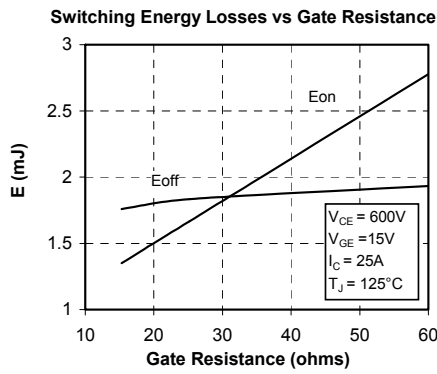
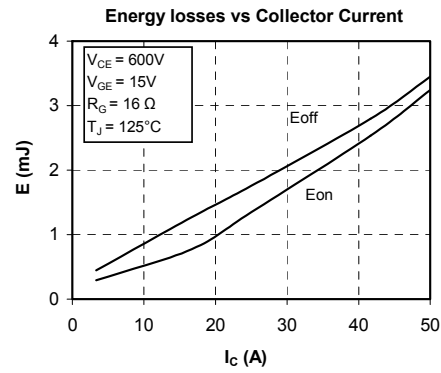
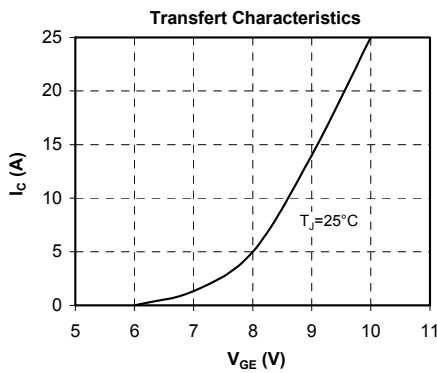
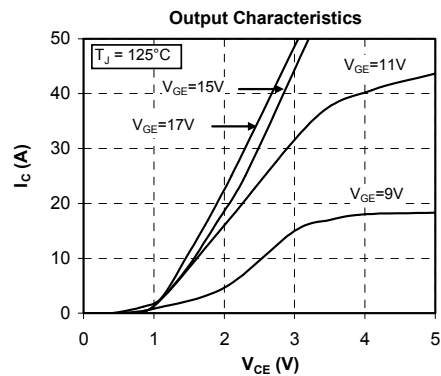
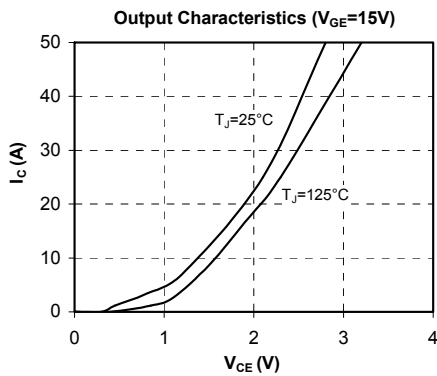
Symbol	Characteristic	Min	Typ	Max	Unit	
V _{ISOL}	RMS Isolation Voltage, any terminal to case t = 1 min, 50/60Hz	4000			V	
T _J	Operating junction temperature range	-40		150	°C	
T _{STG}	Storage Temperature Range	-40		125		
T _C	Operating Case Temperature	-40		100		
Torque	Mounting torque	To heatsink	M4	2	3	N.m
Wt	Package Weight				75	g

Package outline (dimensions in mm)



Typical Performance Curve





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