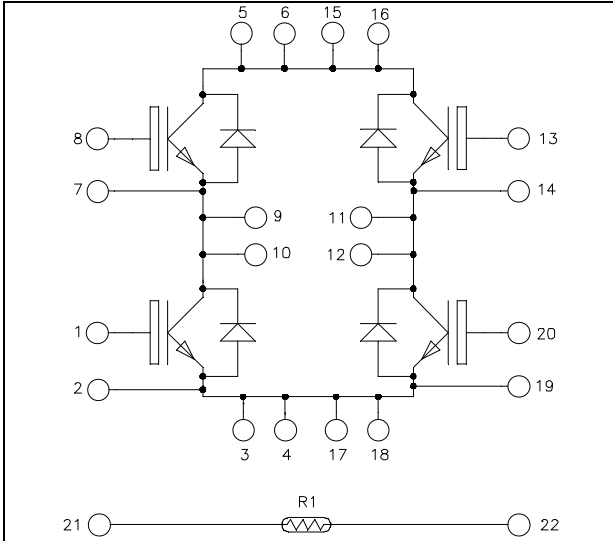


**Full - Bridge
Trench + Field Stop IGBT3
Power Module**

**$V_{CES} = 600V$
 $I_C = 75A @ T_c = 80^\circ C$**

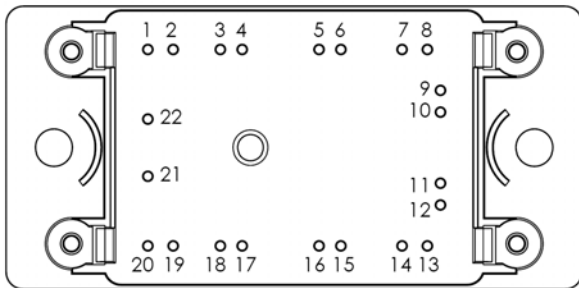


Application

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

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
- 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	600	V
I_C	Continuous Collector Current	$T_c = 25^\circ C$	100
		$T_c = 80^\circ C$	75
I_{CM}	Pulsed Collector Current	$T_c = 25^\circ C$	140
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	250
RBSOA	Reverse Bias Safe Operating Area	$T_j = 150^\circ C$	150A @ 550V

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)

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit	
I_{CES}	Zero Gate Voltage Collector Current	$V_{GE} = 0V, V_{CE} = 600V$			250	μA	
$V_{CE(sat)}$	Collector Emitter Saturation Voltage	$V_{GE} = 15V$ $I_C = 75A$		$T_j = 25^\circ C$	1.5	1.9	V
				$T_j = 150^\circ C$	1.7		
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE} = V_{CE}, I_C = 600\mu A$	5.0	5.8	6.5	V	
I_{GES}	Gate – Emitter Leakage Current	$V_{GE} = 20V, V_{CE} = 0V$			600	nA	

Dynamic Characteristics (per IGBT)

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{ies}	Input Capacitance	$V_{GE} = 0V$ $V_{CE} = 25V$ $f = 1MHz$		4620		pF
C_{oes}	Output Capacitance			300		
C_{res}	Reverse Transfer Capacitance			140		
Q_G	Gate charge	$V_{GE} = \pm 15V, I_C = 75A$ $V_{CE} = 300V$		0.8		μC
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching ($25^\circ C$) $V_{GE} = \pm 15V$ $V_{Bus} = 300V$ $I_C = 75A$ $R_G = 4.7\Omega$		110		ns
T_r	Rise Time			45		
$T_{d(off)}$	Turn-off Delay Time			200		
T_f	Fall Time			40		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching ($150^\circ C$) $V_{GE} = \pm 15V$ $V_{Bus} = 300V$ $I_C = 75A$ $R_G = 4.7\Omega$		120		ns
T_r	Rise Time			50		
$T_{d(off)}$	Turn-off Delay Time			250		
T_f	Fall Time			60		
E_{on}	Turn-on Switching Energy	$V_{GE} = \pm 15V$ $V_{Bus} = 300V$ $I_C = 75A$	$T_j = 25^\circ C$	0.35		mJ
			$T_j = 150^\circ C$	0.6		
E_{off}	Turn-off Switching Energy	$I_C = 75A$ $R_G = 4.7\Omega$	$T_j = 25^\circ C$	2.2		mJ
			$T_j = 150^\circ C$	2.6		
I_{sc}	Short Circuit data	$V_{GE} \leq 15V ; V_{Bus} = 360V$ $t_p \leq 6\mu s ; T_j = 150^\circ C$		380		A
R_{thJC}	Junction to Case Thermal Resistance				0.60	$^\circ C/W$

Reverse diode ratings and characteristics (per diode)

Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit
V _{RRM}	Maximum Peak Repetitive Reverse Voltage			600			V
I _{RM}	Maximum Reverse Leakage Current	V _R =600V				250	μA
I _F	DC Forward current		T _c = 80°C		75		A
V _F	Diode Forward Voltage	I _F = 75A V _{GE} = 0V	T _j = 25°C		1.6	2	V
			T _j = 150°C		1.5		
t _{rr}	Reverse Recovery Time	I _F = 75A V _R = 300V di/dt = 2000A/μs	T _j = 25°C		100		ns
			T _j = 150°C		150		
Q _{rr}	Reverse Recovery Charge		T _j = 25°C		3.6		μC
			T _j = 150°C		7.6		
E _r	Reverse Recovery Energy	T _j = 25°C		0.85		mJ	
		T _j = 150°C		1.8			
R _{thJC}	Junction to Case Thermal Resistance					0.98	°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

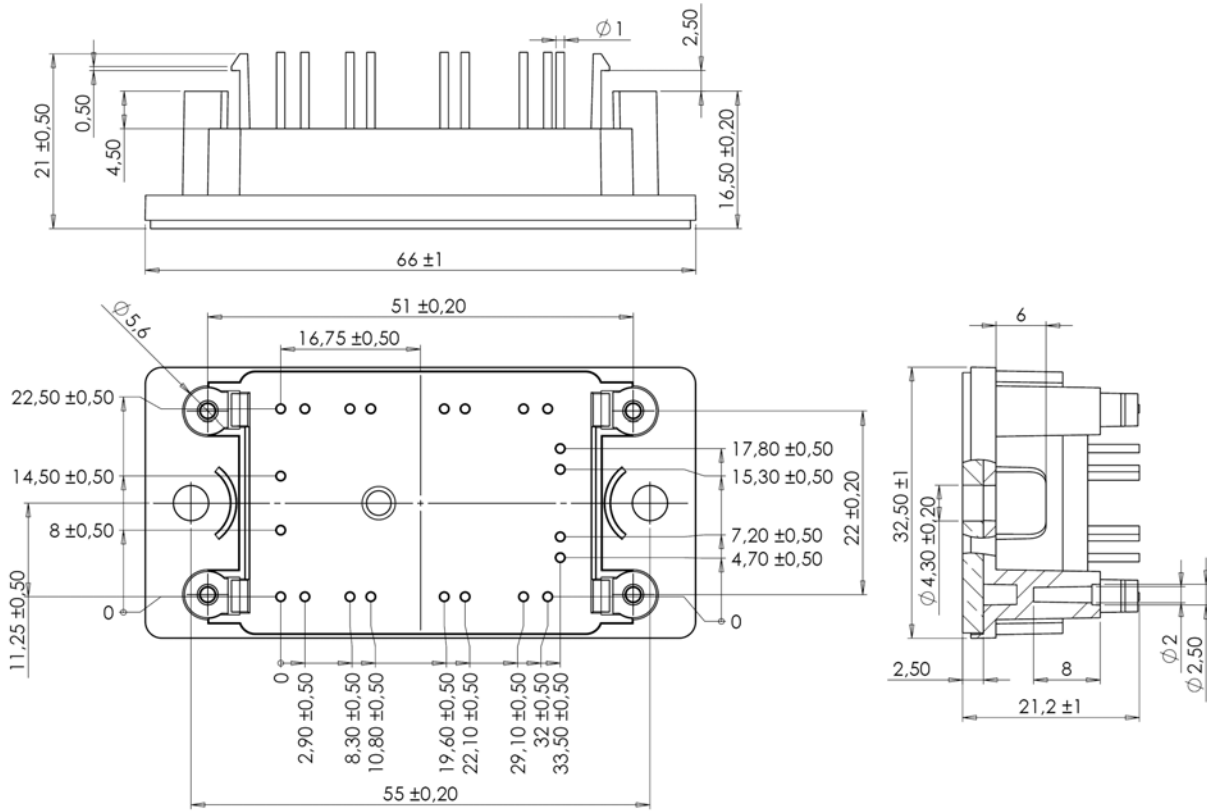
$$R_T = \frac{R_{25}}{\exp \left[B_{25/100} \left(\frac{1}{T_{25}} - \frac{1}{T} \right) \right]}$$

T: Thermistor temperature
 R_T: Thermistor value at T

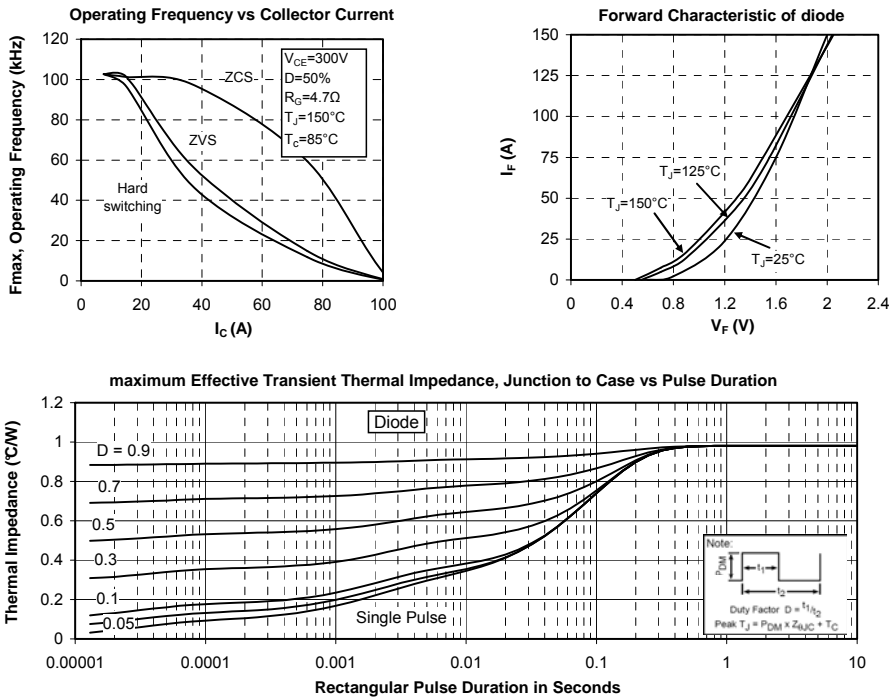
Thermal and package characteristics

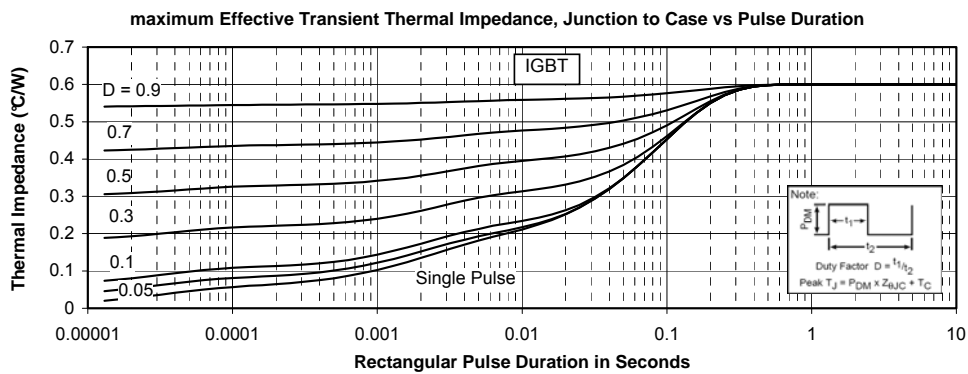
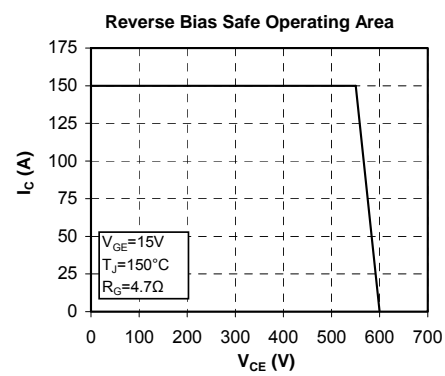
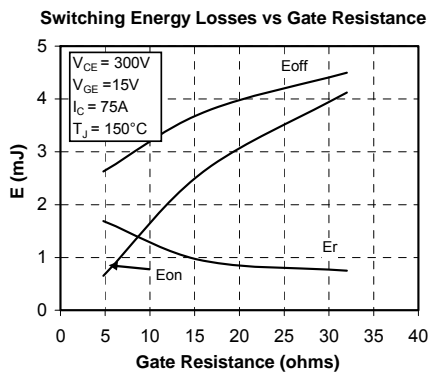
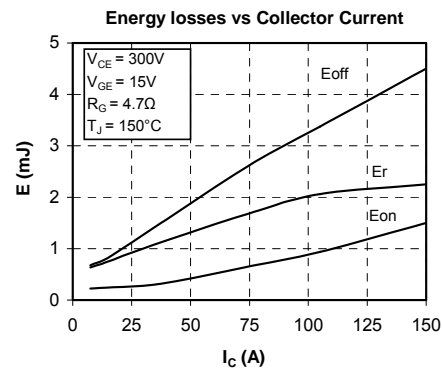
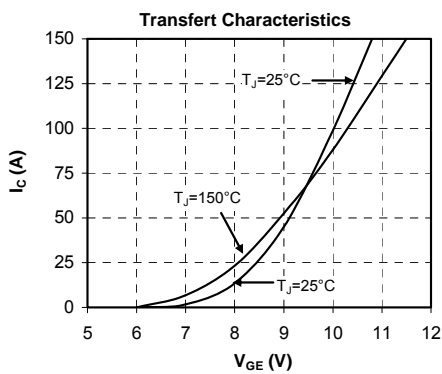
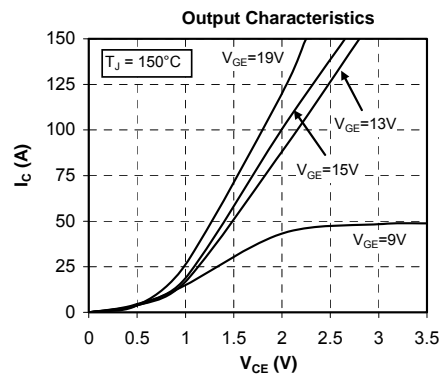
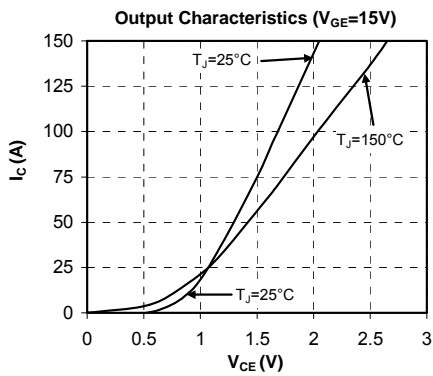
Symbol	Characteristic	Min	Typ	Max	Unit	
V _{ISOL}	RMS Isolation Voltage, any terminal to case t=1 min, I _{isol} <1mA, 50/60Hz	4000			V	
T _J	Operating junction temperature range	-40		175	°C	
T _{STG}	Storage Temperature Range	-40		125		
T _C	Operating Case Temperature	-40		100		
Torque	Mounting torque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

Package outline (dimensions in mm)



Typical Performance Curve





Microsemi reserves the right to change, without notice, the specifications and information contained herein