



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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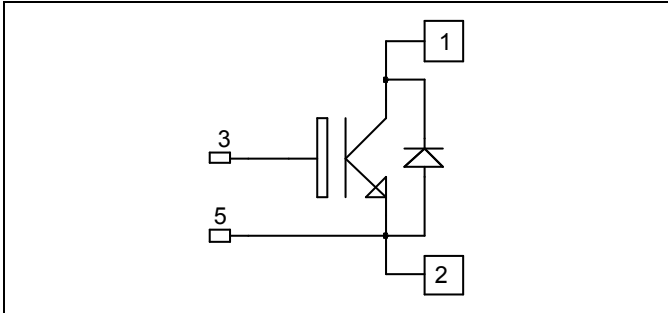
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**Single switch
Trench + Field Stop IGBT
Power Module**

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



Application

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

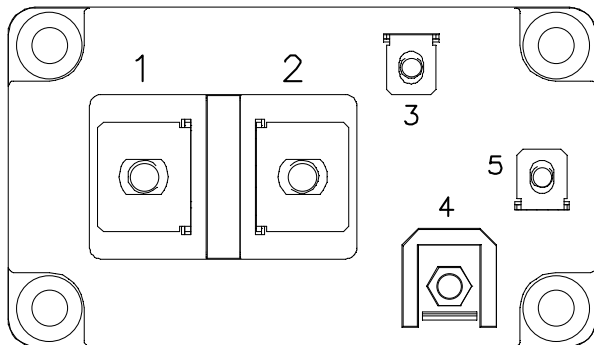
Features

- 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	600	V
I_C	Continuous Collector Current	$T_c = 25^\circ C$	760
		$T_c = 80^\circ C$	580
I_{CM}	Pulsed Collector Current	$T_c = 25^\circ C$	800
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	1600
RBSOA	Reverse Bias Safe Operating Area	$T_j = 125^\circ C$	1200A@550V

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

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

Electrical Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
I_{CES}	Zero Gate Voltage Collector Current	$V_{GE} = 0\text{V}, V_{CE} = 600\text{V}$			1	mA
$V_{CE(sat)}$	Collector Emitter saturation Voltage	$V_{GE} = 15\text{V}$ $I_C = 600\text{A}$	$T_j = 25^\circ\text{C}$	1.5	1.9	V
			$T_j = 125^\circ\text{C}$	1.7		
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE} = V_{CE}, I_C = 10\text{mA}$	5.0	5.8	6.5	V
I_{GES}	Gate – Emitter Leakage Current	$V_{GE} = 20\text{V}, V_{CE} = 0\text{V}$			2400	nA

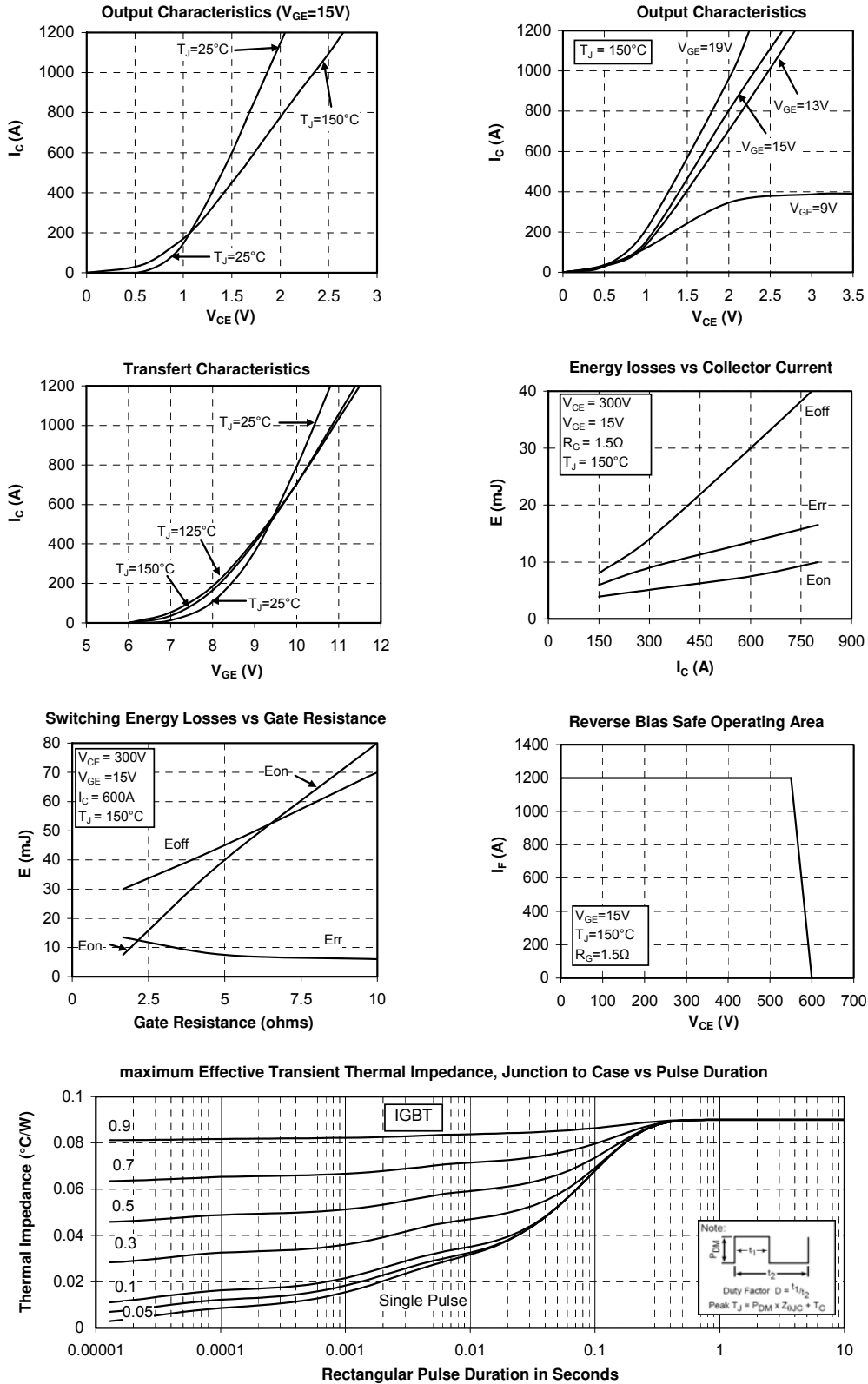
Dynamic Characteristics

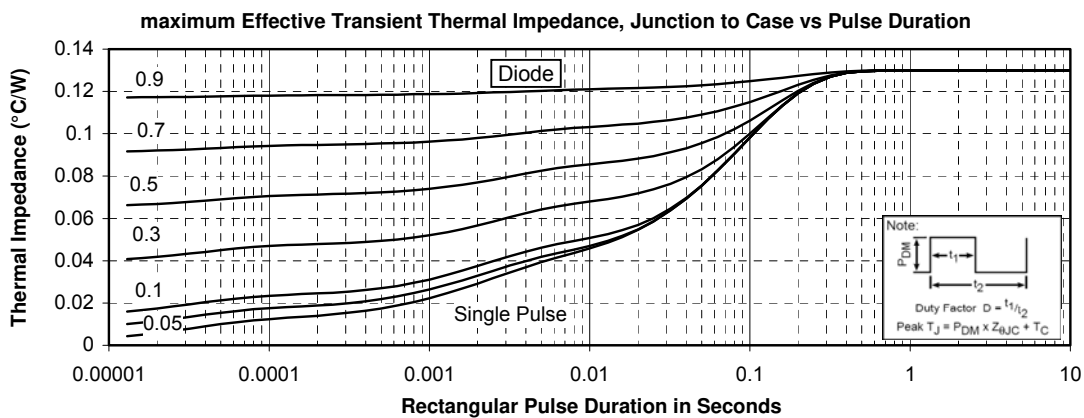
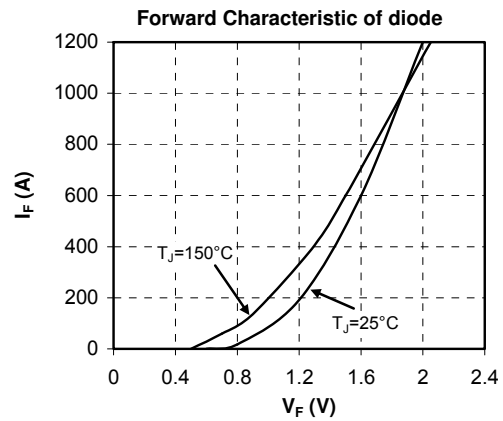
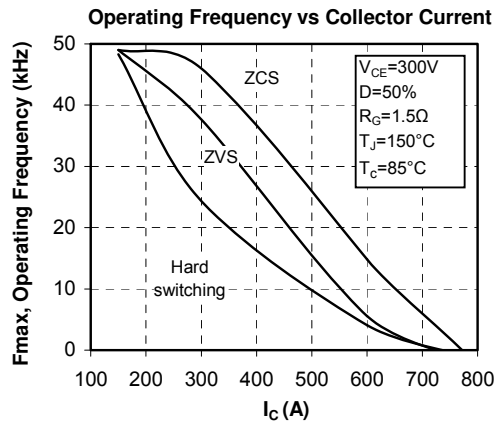
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{ies}	Input Capacitance	$V_{GE} = 0\text{V}$		37		nF
C_{oes}	Output Capacitance	$V_{CE} = 25\text{V}$		2.3		
C_{res}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		1.1		
Q_G	Gate charge	$V_{GE} = -8/+15\text{V}, I_C = 600\text{A}$ $V_{CE} = 300\text{V}$		4.4		μC
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (25°C)		250		ns
T_r	Rise Time	$V_{GE} = \pm 15\text{V}$		70		
$T_{d(off)}$	Turn-off Delay Time	$V_{Bus} = 300\text{V}$ $I_C = 600\text{A}$		550		
T_f	Fall Time	$R_G = 1.5\Omega$		70		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (150°C)		270		ns
T_r	Rise Time	$V_{GE} = \pm 15\text{V}$		80		
$T_{d(off)}$	Turn-off Delay Time	$V_{Bus} = 300\text{V}$ $I_C = 600\text{A}$		650		
T_f	Fall Time	$R_G = 1.5\Omega$		80		
E_{on}	Turn on Energy	$V_{GE} = \pm 15\text{V}$ $V_{Bus} = 300\text{V}$	$T_j = 150^\circ\text{C}$	7.5		mJ
E_{off}	Turn off Energy	$I_C = 600\text{A}$ $R_G = 1.5\Omega$	$T_j = 150^\circ\text{C}$	30		
I_{sc}	Short Circuit data	$V_{GE} \leq 15\text{V}; V_{Bus} = 360\text{V}$ $t_p = 6\mu\text{s}; T_j = 150^\circ\text{C}$		3000		A

Reverse diode ratings and characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V_{RRM}	Maximum Peak Repetitive Reverse Voltage		600			V
I_{RRM}	Maximum Reverse Leakage Current	$V_R = 600\text{V}$	$T_j = 25^\circ\text{C}$		750	μA
			$T_j = 150^\circ\text{C}$		1000	
I_F	DC Forward Current		$T_c = 80^\circ\text{C}$	600		A
V_F	Diode Forward Voltage	$I_F = 600\text{A}$ $V_{GE} = 0\text{V}$	$T_j = 25^\circ\text{C}$	1.6	2.1	V
			$T_j = 150^\circ\text{C}$	1.5		
t_{rr}	Reverse Recovery Time		$T_j = 25^\circ\text{C}$	150		ns
			$T_j = 150^\circ\text{C}$	250		
Q_{rr}	Reverse Recovery Charge	$I_F = 600\text{A}$ $V_R = 300\text{V}$ $di/dt = 8600\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$	27		μC
			$T_j = 150^\circ\text{C}$	60		
E_{rr}	Reverse Recovery Energy		$T_j = 25^\circ\text{C}$	6.4		mJ
			$T_j = 150^\circ\text{C}$	14		

Typical Performance Curve





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

Microsemi's products are covered by one or more of U.S. patents 4,895,810 5,045,903 5,089,434 5,182,234 5,019,522 5,262,336 6,503,786 5,256,583 4,748,103 5,283,202 5,231,474 5,434,095 5,528,058 6,939,743 7,352,045 5,283,201 5,801,417 5,648,283 7,196,634 6,664,594 7,157,886 6,939,743 7,342,262 and foreign patents. U.S. and Foreign patents pending. All Rights Reserved.