



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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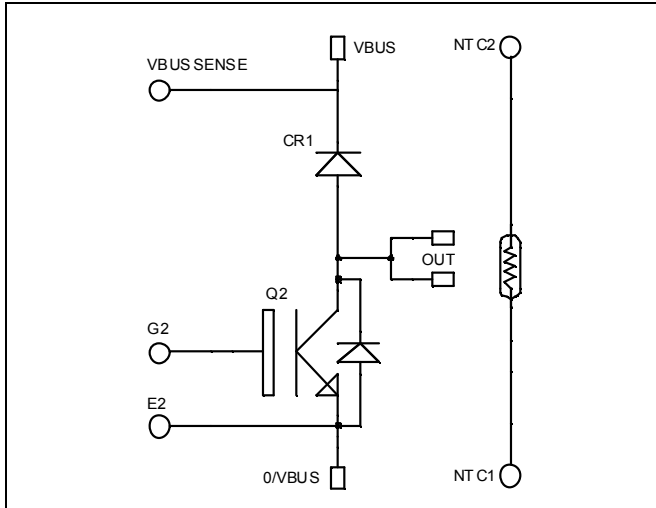
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**Boost chopper
Trench + Field Stop IGBT®
Power Module**

**$V_{CES} = 600V$
 $I_C = 100A @ T_c = 80^\circ C$**

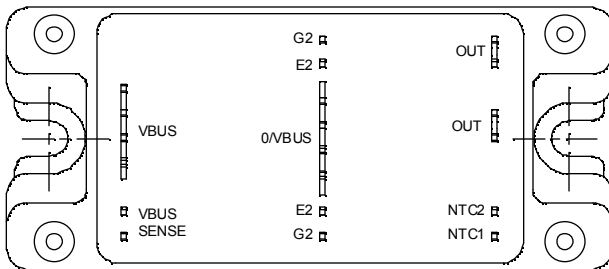


Application

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

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
 - Avalanche energy rated
 - RBSOA and SCSOA rated
- Kelvin emitter for easy drive
- Very low stray inductance
 - Symmetrical design
 - Lead frames for power connections
- High level of integration
- Internal thermistor for temperature monitoring



Benefits

- Stable temperature behavior
- Very rugged
- Solderable terminals for easy PCB mounting
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Easy paralleling due to positive TC of VCEsat
- Low profile
- RoHS Compliant

Absolute maximum ratings

| Symbol | Parameter | Max ratings | Unit |
|-----------|---------------------------------------|---------------------|-------------|
| V_{CES} | Collector - Emitter Breakdown Voltage | 600 | V |
| I_C | Continuous Collector Current | $T_C = 25^\circ C$ | 150 |
| | | $T_C = 80^\circ C$ | 100 |
| I_{CM} | Pulsed Collector Current | $T_C = 25^\circ C$ | 200 |
| V_{GE} | Gate - Emitter Voltage | ± 20 | V |
| P_D | Maximum Power Dissipation | $T_C = 25^\circ C$ | 340 |
| RBSOA | Reverse Bias Safe Operating Area | $T_j = 150^\circ C$ | 200A @ 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 | $V_{GE} = 0\text{V}$, $V_{CE} = 600\text{V}$ | | | 250 | μA |
| $V_{CE(sat)}$ | Collector Emitter Saturation Voltage | $V_{GE} = 15\text{V}$ $I_C = 100\text{A}$ | $T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$ | 1.5 1.7 | 1.9 | V |
| $V_{GE(th)}$ | Gate Threshold Voltage | $V_{GE} = V_{CE}$, $I_C = 1.5\text{ mA}$ | 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 |

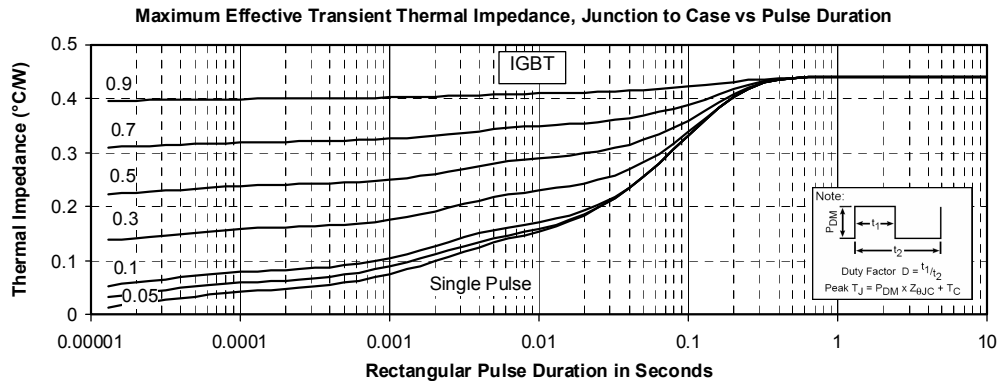
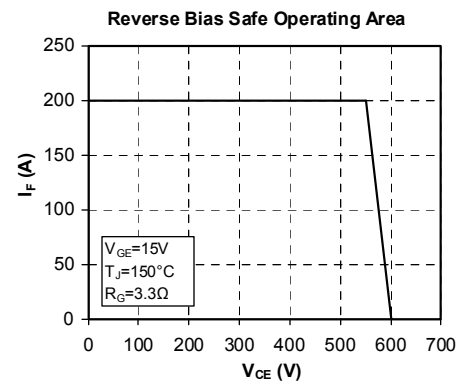
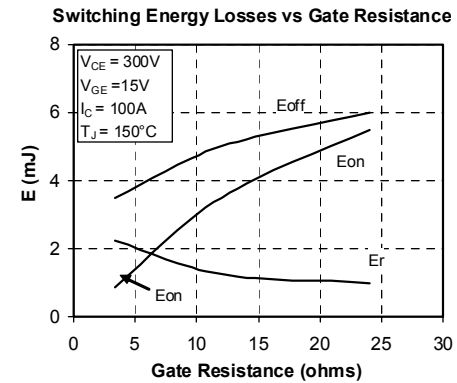
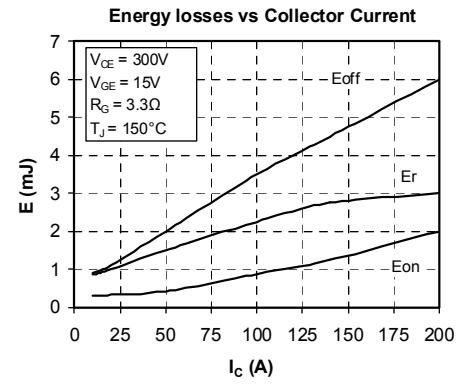
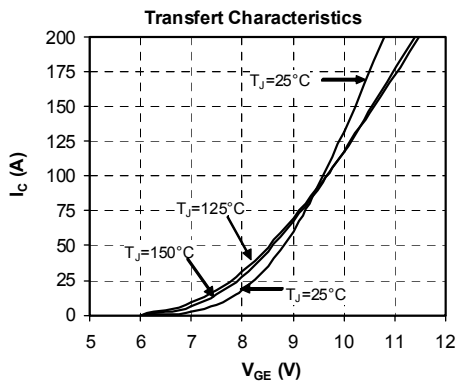
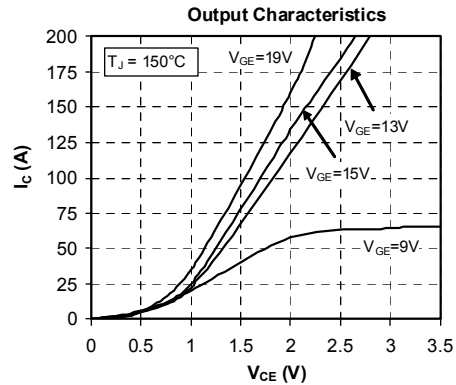
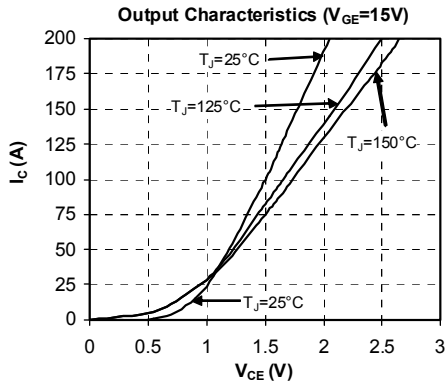
Dynamic Characteristics

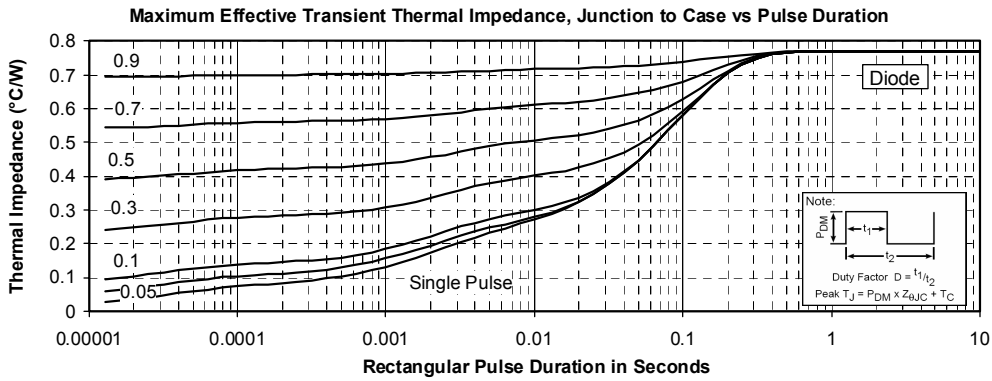
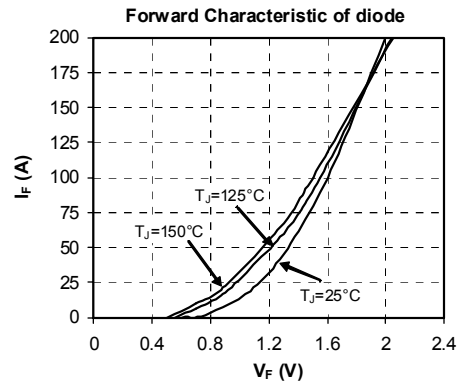
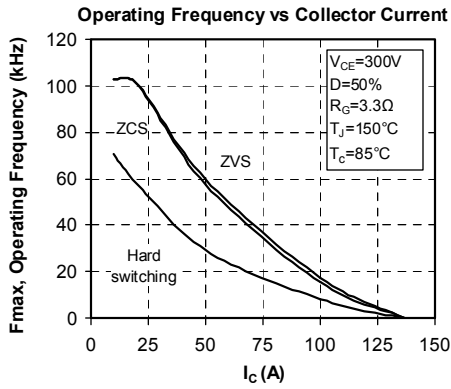
| Symbol | Characteristic | Test Conditions | Min | Typ | Max | Unit |
|--------------|------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|--------------|-----|------|
| C_{ies} | Input Capacitance | $V_{GE} = 0\text{V}$ | | 6100 | | pF |
| C_{oes} | Output Capacitance | $V_{CE} = 25\text{V}$ | | 390 | | |
| C_{res} | Reverse Transfer Capacitance | $f = 1\text{MHz}$ | | 190 | | |
| $T_{d(on)}$ | Turn-on Delay Time | Inductive Switching (25°C) $V_{GE} = \pm 15\text{V}$ $V_{Bus} = 300\text{V}$ $I_C = 100\text{A}$ $R_G = 3.3\Omega$ | | 115 | | ns |
| T_r | Rise Time | | | 45 | | |
| $T_{d(off)}$ | Turn-off Delay Time | | | 225 | | |
| T_f | Fall Time | | | 55 | | |
| $T_{d(on)}$ | Turn-on Delay Time | Inductive Switching (150°C) $V_{GE} = \pm 15\text{V}$ $V_{Bus} = 300\text{V}$ $I_C = 100\text{A}$ $R_G = 3.3\Omega$ | | 130 | | ns |
| T_r | Rise Time | | | 50 | | |
| $T_{d(off)}$ | Turn-off Delay Time | | | 300 | | |
| T_f | Fall Time | | | 70 | | |
| E_{on} | Turn on Energy | $V_{GE} = \pm 15\text{V}$ $V_{Bus} = 300\text{V}$ $I_C = 100\text{A}$ | $T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$ | 0.4 0.875 | | mJ |
| E_{off} | Turn off Energy | | $T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$ | 2.5 3.5 | | |

Chopper diode ratings and characteristics

| Symbol | Characteristic | Test Conditions | Min | Typ | Max | Unit |
|-----------|-----------------------------------------|----------------------------------------------------------------------------------|-------------------------------------------------------|------------|------------|---------------|
| V_{RRM} | Maximum Peak Repetitive Reverse Voltage | | 600 | | | V |
| I_{RM} | Maximum Reverse Leakage Current | $V_R = 600\text{V}$ | $T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$ | | 250 500 | μA |
| I_F | DC Forward Current | | | 100 | | A |
| V_F | Diode Forward Voltage | $I_F = 100\text{A}$ $V_{GE} = 0\text{V}$ | $T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$ | 1.6 1.5 | 2 | V |
| t_{rr} | Reverse Recovery Time | $I_F = 100\text{A}$ $V_R = 300\text{V}$ $di/dt = 2000\text{A}/\mu\text{s}$ | $T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$ | 125 220 | | ns |
| Q_{rr} | Reverse Recovery Charge | | $T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$ | 4.7 9.9 | | |
| E_r | Reverse Recovery Energy | | $T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$ | 1.1 2.4 | | mJ |

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 and foreign patents. U.S. and Foreign patents pending. All Rights Reserved.