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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.

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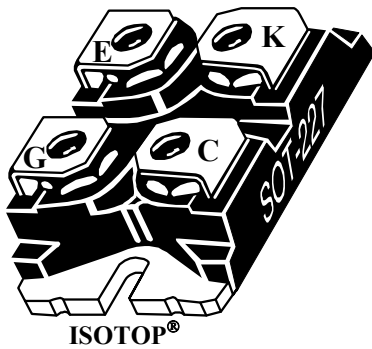
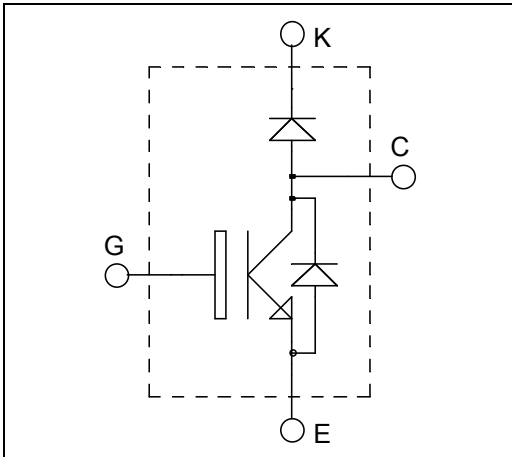
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**ISOTOP® Boost chopper
High speed Trench + Field Stop IGBT4
Power Module**

**$V_{CES} = 650V$
 $I_C = 50A @ T_c = 80^\circ C$**


Application

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

Features

- **High speed Trench + Field Stop IGBT 4**
 - Low voltage drop
 - Low leakage current
 - Low switching losses
- ISOTOP® Package (SOT-227)
- Very low stray inductance

Benefits

- Low conduction losses
- Stable temperature behavior
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Easy paralleling due to positive T_C of V_{CESat}
- RoHS Compliant

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

Absolute maximum ratings

<i>Symbol</i>	<i>Parameter</i>	<i>Max ratings</i>	<i>Unit</i>
V_{CES}	Collector - Emitter Voltage	650	V
I_C	Continuous Collector Current	$T_C = 25^\circ C$	80
		$T_C = 80^\circ C$	50
I_{CM}	Pulsed Collector Current	$T_C = 25^\circ C$	140
V_{GE}	Gate - Emitter Voltage	± 20	V
P_D	Power Dissipation	220	W

 **CAUTION:** These Devices are sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed

Electrical Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
I _{CES}	Zero Gate Voltage Collector Current	V _{GE} = 0V, V _{CE} = 650V			50	μA
V _{CE(sat)}	Collector Emitter Saturation Voltage	V _{GE} = 15V I _C = 50A	T _j = 25°C 1.4	1.85	2.3	V
			T _j = 150°C 2.2			
V _{GE(th)}	Gate Threshold Voltage	V _{GE} = V _{CE} , I _C = 0.8 mA	4.2	5.1	5.6	V
I _{GES}	Gate – Emitter Leakage Current	V _{GE} = 20V, V _{CE} = 0V			150	nA

Dynamic Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C _{ies}	Input Capacitance	V _{GE} = 0V V _{CE} = 25V f = 1MHz		3100		pF
C _{oes}	Output Capacitance			116		
C _{res}	Reverse Transfer Capacitance			90		
Q _G	Gate charge	V _{GE} = 15V, I _C = 50A V _{CE} = 480V		315		nC
T _{d(on)}	Turn-on Delay Time	Inductive Switching (25°C) V _{GE} = ±15V V _{Bus} = 400V I _C = 50A R _G = 7Ω		19		ns
T _r	Rise Time			33		
T _{d(off)}	Turn-off Delay Time			197		
T _f	Fall Time			21		
T _{d(on)}	Turn-on Delay Time	Inductive Switching (150°C) V _{GE} = ±15V V _{Bus} = 400V I _C = 50A R _G = 7Ω		19		ns
T _r	Rise Time			29		
T _{d(off)}	Turn-off Delay Time			227		
T _f	Fall Time			22		
E _{on}	Turn on Energy	V _{GE} = ±15V V _{Bus} = 400V I _C = 50A R _G = 7Ω	T _j = 150°C	1.2		mJ
E _{off}	Turn off Energy			T _j = 150°C	1	
I _{sc}	Short Circuit data	V _{GE} ≤ 15V ; V _{Bus} = 400V t _p ≤ 5μs ; T _j = 150°C		350		A
R _{thJC}	Junction to Case Thermal Resistance				0.68	°C/W

Chopper diode ratings and characteristics

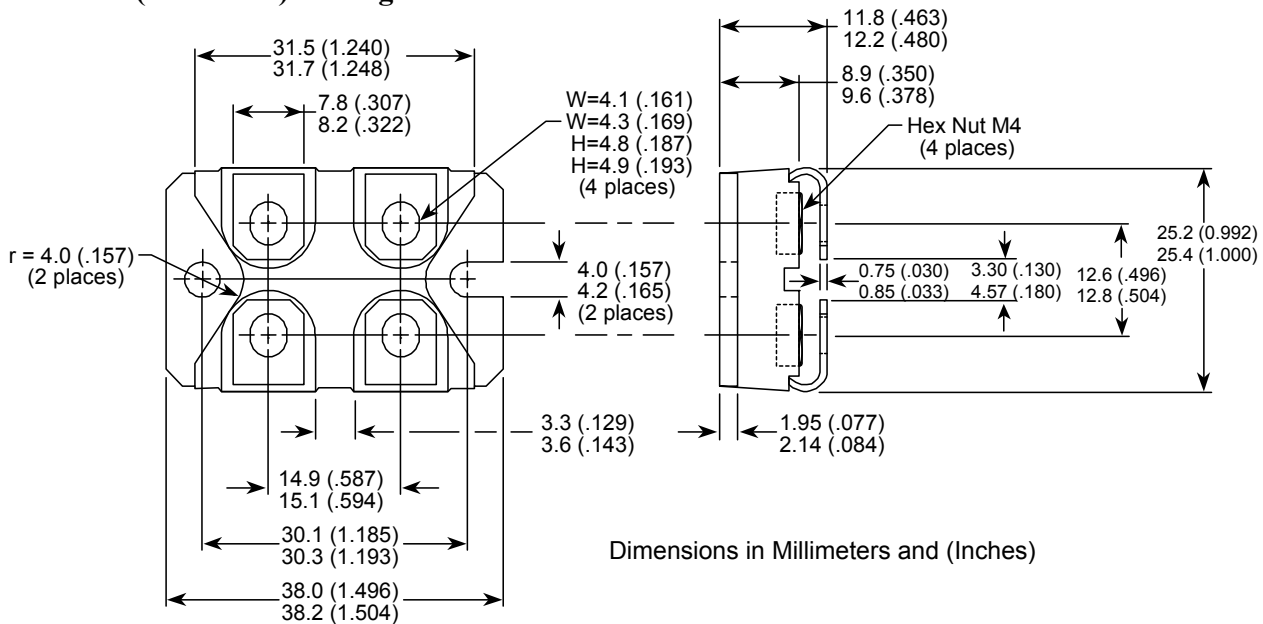
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V _{RRM}	Peak Repetitive Reverse Voltage				650	V
I _{RM}	Reverse Leakage Current	V _R = 650V			50	μA
I _F	DC Forward Current		T _c = 25°C	50		A
V _F	Diode Forward Voltage	I _F = 50A V _{GE} = 0V	T _j = 25°C	1.6	2	V
			T _j = 150°C	1.5		
t _{rr}	Reverse Recovery Time	I _F = 50A V _R = 300V di/dt = 1800A/μs	T _j = 25°C	100		ns
			T _j = 150°C	150		
Q _{rr}	Reverse Recovery Charge		T _j = 25°C	2.6		μC
			T _j = 150°C	5.4		
E _{rr}	Reverse Recovery Energy		T _j = 25°C	0.6		
		T _j = 150°C	1.2			
R _{thJC}	Junction to Case Thermal Resistance				1.14	°C/W

IGBT parallel diode ratings and characteristics

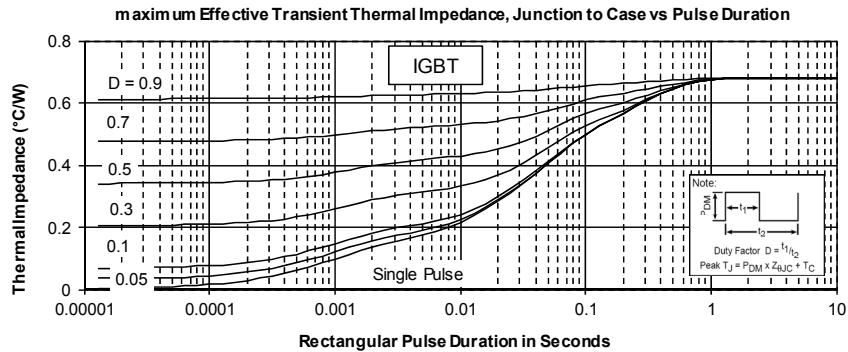
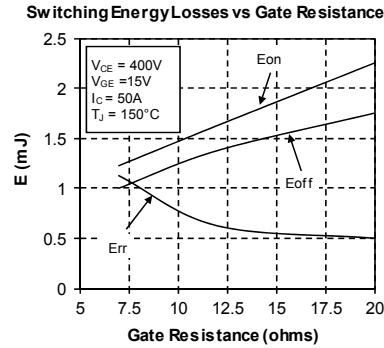
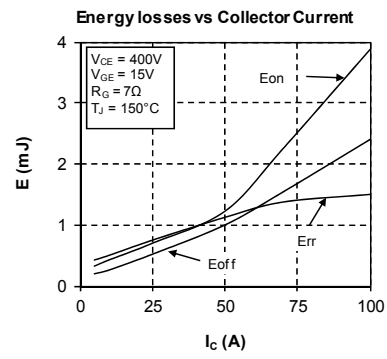
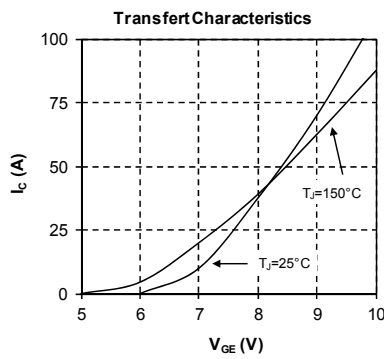
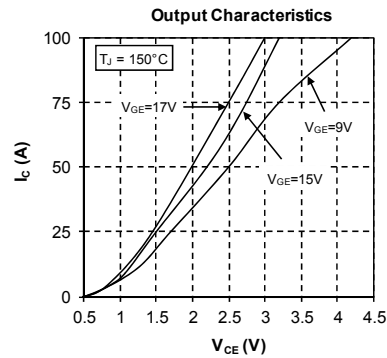
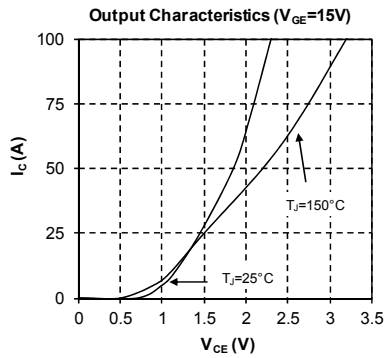
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V _{RRM}	Peak Repetitive Reverse Voltage				650	V
I _{RM}	Reverse Leakage Current	V _R = 650V			50	μA
I _F	DC Forward Current		T _c = 60°C	20		A
V _F	Diode Forward Voltage	I _F = 20A V _{GE} = 0V	T _j = 25°C	1.6	2	V
			T _j = 150°C	1.5		
t _{rr}	Reverse Recovery Time	I _F = 20A V _R = 300V di/dt = 1600A/μs	T _j = 25°C	100		ns
			T _j = 150°C	150		
Q _{rr}	Reverse Recovery Charge	I _F = 20A V _R = 300V di/dt = 1600A/μs	T _j = 25°C	1.1		μC
			T _j = 150°C	2.3		
E _{rr}	Reverse Recovery Energy	I _F = 20A V _R = 300V di/dt = 1600A/μs	T _j = 25°C	0.23		mJ
			T _j = 150°C	0.50		
R _{thJC}	Junction to Case Thermal Resistance				2.6	°C/W

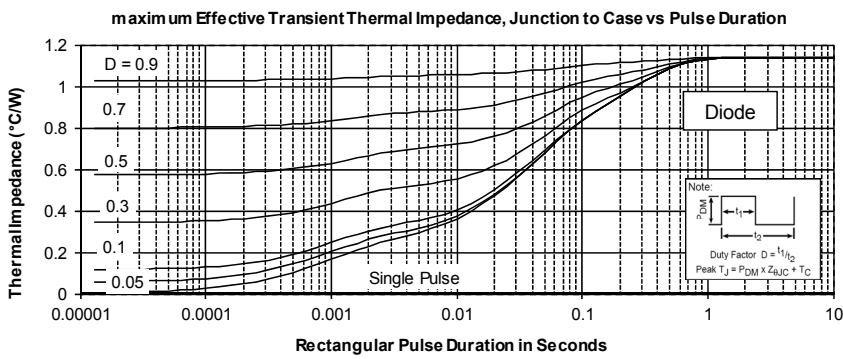
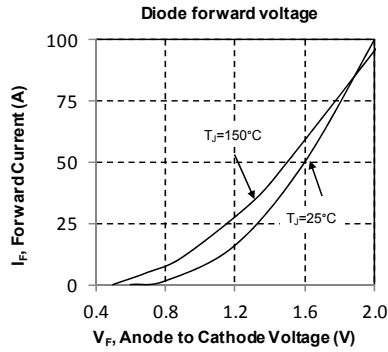
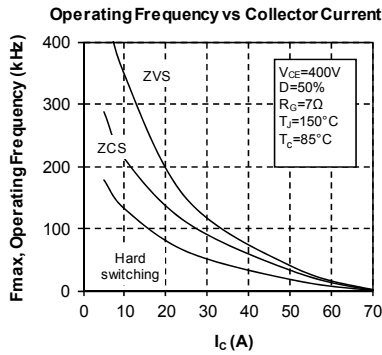
Thermal and package characteristics

Symbol	Characteristic	Min	Typ	Max	Unit
V _{ISOL}	RMS Isolation Voltage, any terminal to case t = 1 min, 50/60Hz	2500			V
T _J , T _{STG}	Storage Temperature Range	-55		175	°C
T _{JOP}	Recommended junction temperature under switching conditions	-55		T _j max -25	
T _L	Max Lead Temp for Soldering: 0.063" from case for 10 sec			300	
Torque	Mounting torque (Mounting = 8-32 or 4mm Machine and terminals = 4mm Machine)			1.5	N.m
Wt	Package Weight		29.2		g

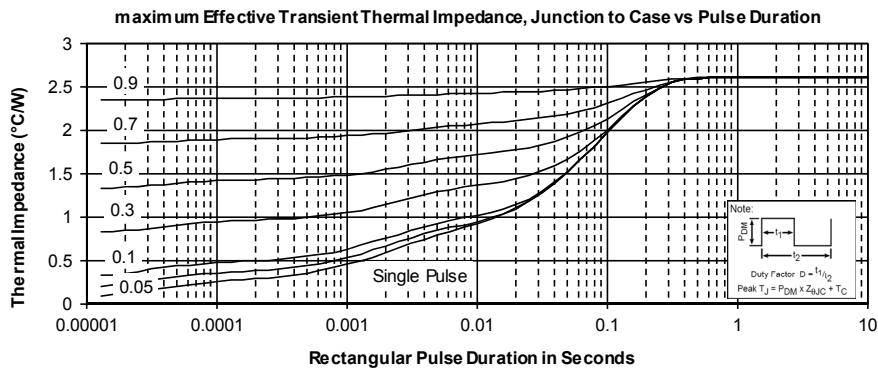
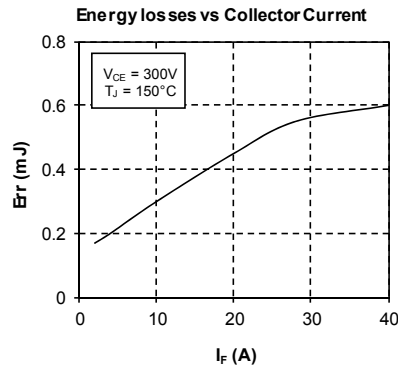
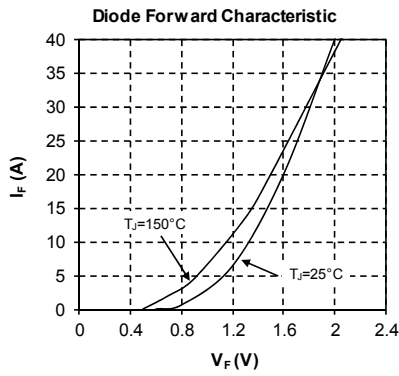
SOT-227 (ISOTOP®) Package Outline


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IGBT & Chopper diode Typical Performance Curves




IGBT parallel diode Typical Performance Curves



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