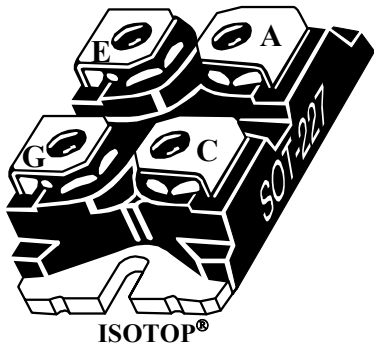
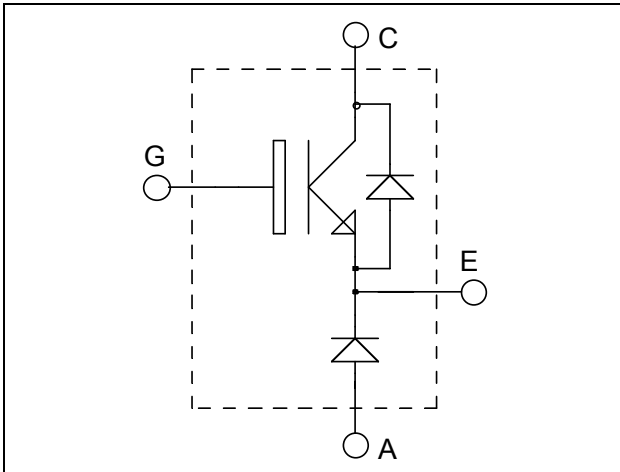


**ISOTOP[®] Buck chopper
Trench + Field Stop IGBT4
Power module**

**$V_{CES} = 1200V$
 $I_C = 40A @ T_c = 80^{\circ}C$**



Application

- AC and DC motor control
- Switched Mode Power Supplies

Features

- Trench + Field Stop IGBT 4 Technology
 - Low voltage drop
 - Low leakage current
 - Low switching losses
 - Soft recovery parallel diodes
 - Low diode VF
 - Low leakage current
 - RBSOA and SCSOA rated
- ISOTOP[®] Package (SOT-227)
- Very low stray inductance
- High level of integration

Benefits

- Low conduction losses
- 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		1200	V
I_C	Continuous Collector Current	$T_c = 25^{\circ}C$	65	A
		$T_c = 80^{\circ}C$	40	
I_{CM}	Pulsed Collector Current	$T_c = 25^{\circ}C$	70	
V_{GE}	Gate - Emitter Voltage		± 20	V
P_D	Maximum Power Dissipation	$T_c = 25^{\circ}C$	220	W
RBSOA	Reverse Bias Safe Operating Area	$T_j = 150^{\circ}C$	70A @ 1100V	

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	$V_{GE} = 0V, V_{CE} = 1200V$			250	μA
$V_{CE(sat)}$	Collector Emitter saturation Voltage	$V_{GE} = 15V$ $I_C = 35A$		1.85 2.25	2.25	V
		$T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$				
$V_{GE(th)}$	Gate Threshold Voltage	$V_{GE} = V_{CE}, I_C = 1.2mA$	5.0	5.8	6.5	V
I_{GES}	Gate – Emitter Leakage Current	$V_{GE} = 20V, V_{CE} = 0V$			400	nA

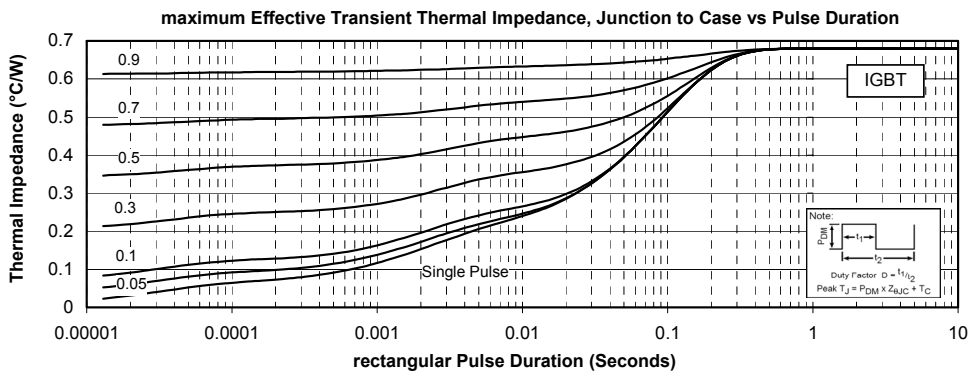
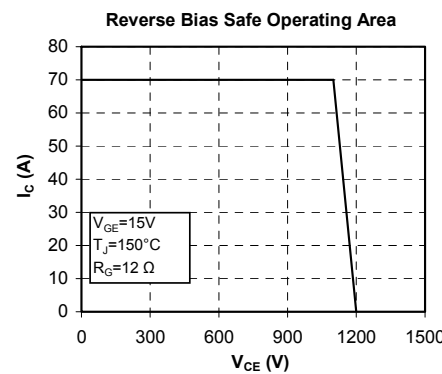
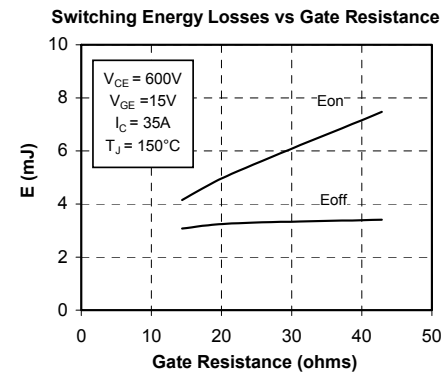
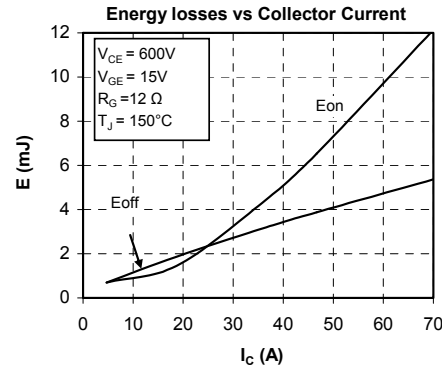
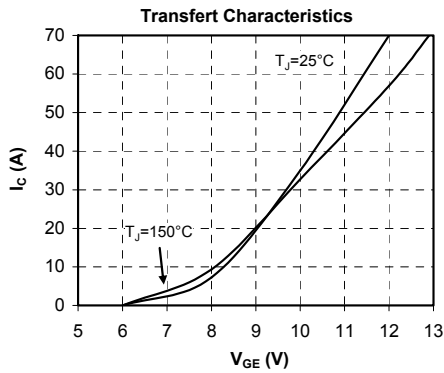
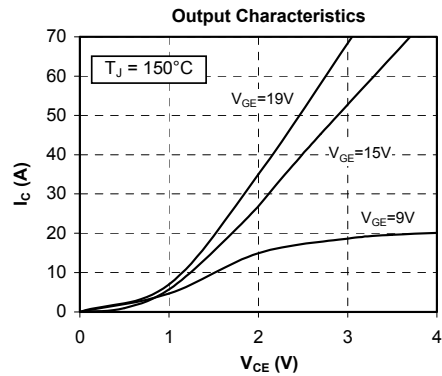
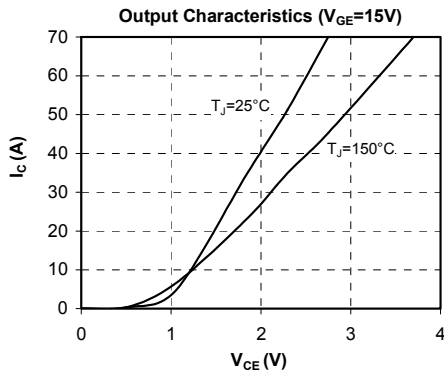
Dynamic Characteristics

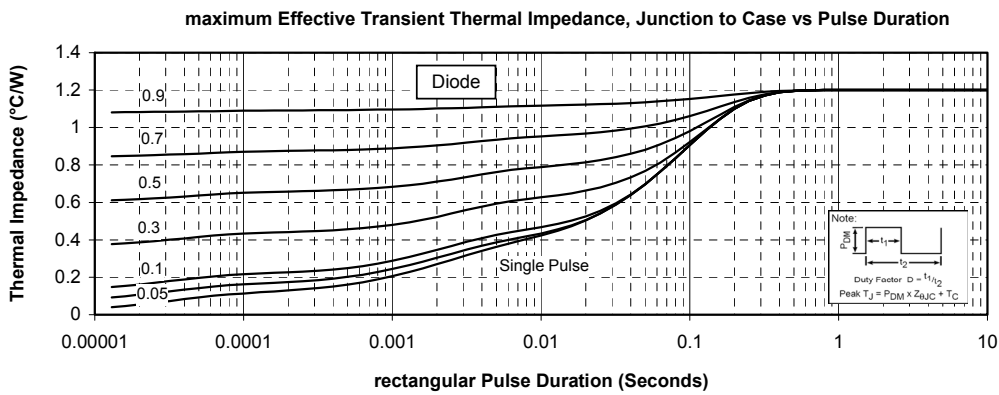
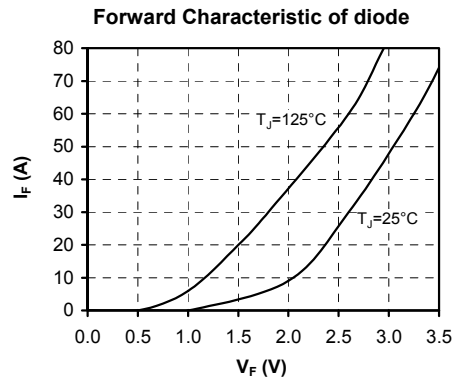
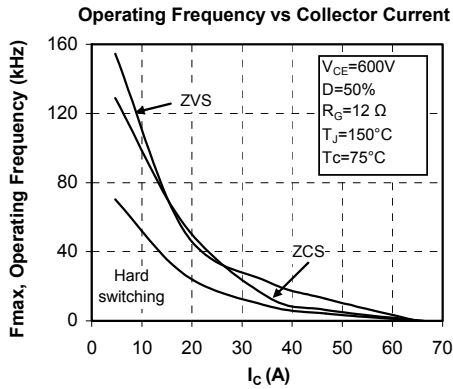
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{ies}	Input Capacitance	$V_{GE} = 0V$		1950		pF
C_{oes}	Output Capacitance	$V_{CE} = 25V$		155		
C_{res}	Reverse Transfer Capacitance	$f = 1MHz$		115		
Q_G	Gate charge	$V_{GE} = \pm 15V; V_{CE} = 600V$ $I_C = 35A$		0.27		μC
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (25°C) $V_{GE} = \pm 15V$ $V_{CE} = 600V$ $I_C = 35A$ $R_G = 12\Omega$		130		ns
T_r	Rise Time			20		
$T_{d(off)}$	Turn-off Delay Time			300		
T_f	Fall Time			45		
$T_{d(on)}$	Turn-on Delay Time	Inductive Switching (150°C) $V_{GE} = \pm 15V$ $V_{CE} = 600V$ $I_C = 35A$ $R_G = 12\Omega$		150		ns
T_r	Rise Time			35		
$T_{d(off)}$	Turn-off Delay Time			350		
T_f	Fall Time			80		
E_{on}	Turn-on Switching Energy	$V_{GE} = \pm 15V$ $V_{CE} = 600V$ $I_C = 35A$ $R_G = 12\Omega$	$T_j = 25^\circ\text{C}$	2.6		mJ
			$T_j = 150^\circ\text{C}$	4		
E_{off}	Turn-off Switching Energy		$T_j = 25^\circ\text{C}$	2		mJ
			$T_j = 150^\circ\text{C}$	3		
I_{sc}	Short Circuit data	$V_{GE} \leq 15V; V_{Bus} = 900V$ $t_p \leq 10\mu\text{s}; T_j = 150^\circ\text{C}$		140		A

Chopper diode ratings and characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V_{RRM}	Maximum Peak Repetitive Reverse Voltage		1200			V
I_{RM}	Maximum Reverse Leakage Current	$V_R = 1200V$			100 500	μA
		$T_j = 25^\circ\text{C}$ $T_j = 150^\circ\text{C}$				
I_F	DC Forward Current	$T_c = 80^\circ\text{C}$		30		A
V_F	Diode Forward Voltage	$I_F = 30A$ $I_F = 60A$ $I_F = 30A$		2.6 3.2 1.8	3.1	V
		$T_j = 125^\circ\text{C}$				
t_{rr}	Reverse Recovery Time	$I_F = 30A$ $V_R = 800V$ $di/dt = 200A/\mu\text{s}$	$T_j = 25^\circ\text{C}$	300		ns
			$T_j = 125^\circ\text{C}$	380		
Q_{rr}	Reverse Recovery Charge		$T_j = 25^\circ\text{C}$	360		nC
			$T_j = 125^\circ\text{C}$	1700		

Typical Performance Curve





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