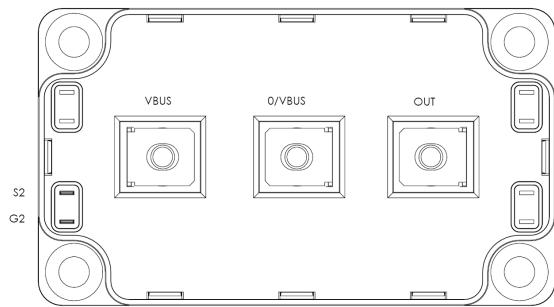
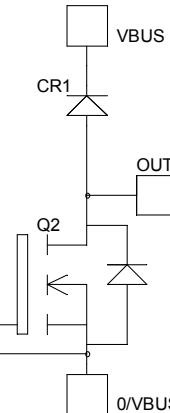


**Boost chopper
MOSFET Power Module**

$V_{DSS} = 200V$
 $R_{DSon} = 4m\Omega$ typ @ $T_j = 25^\circ C$
 $I_D = 372A$ @ $T_c = 25^\circ C$


Application

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

Features

- Power MOS 7® MOSFETs
 - Low R_{DSon}
 - Low input and Miller capacitance
 - Low gate charge
 - Avalanche energy rated
 - Very rugged
- Kelvin source for easy drive
- Very low stray inductance
 - Symmetrical design
 - M5 power connectors
- High level of integration

Benefits

- Outstanding performance at high frequency operation
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Low profile
- RoHS Compliant

Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{DSS}	Drain - Source Breakdown Voltage	200	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	A
		$T_c = 80^\circ C$	
I_{DM}	Pulsed Drain current	1488	
V_{GS}	Gate - Source Voltage	± 30	V
R_{DSon}	Drain - Source ON Resistance	5	$m\Omega$
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	W
I_{AR}	Avalanche current (repetitive and non repetitive)	100	A
E_{AR}	Repetitive Avalanche Energy	50	mJ
E_{AS}	Single Pulse Avalanche Energy	3000	

 **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_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0\text{V}$, $V_{DS} = 200\text{V}$	$T_j = 25^\circ\text{C}$			500	μA
		$V_{GS} = 0\text{V}$, $V_{DS} = 160\text{V}$	$T_j = 125^\circ\text{C}$			2000	
$R_{DS(on)}$	Drain – Source on Resistance	$V_{GS} = 10\text{V}$, $I_D = 186\text{A}$			4	5	$\text{m}\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}$, $I_D = 10\text{mA}$		3		5	V
I_{GSS}	Gate – Source Leakage Current	$V_{GS} = \pm 30\text{ V}$, $V_{DS} = 0\text{V}$				± 200	nA

Dynamic Characteristics

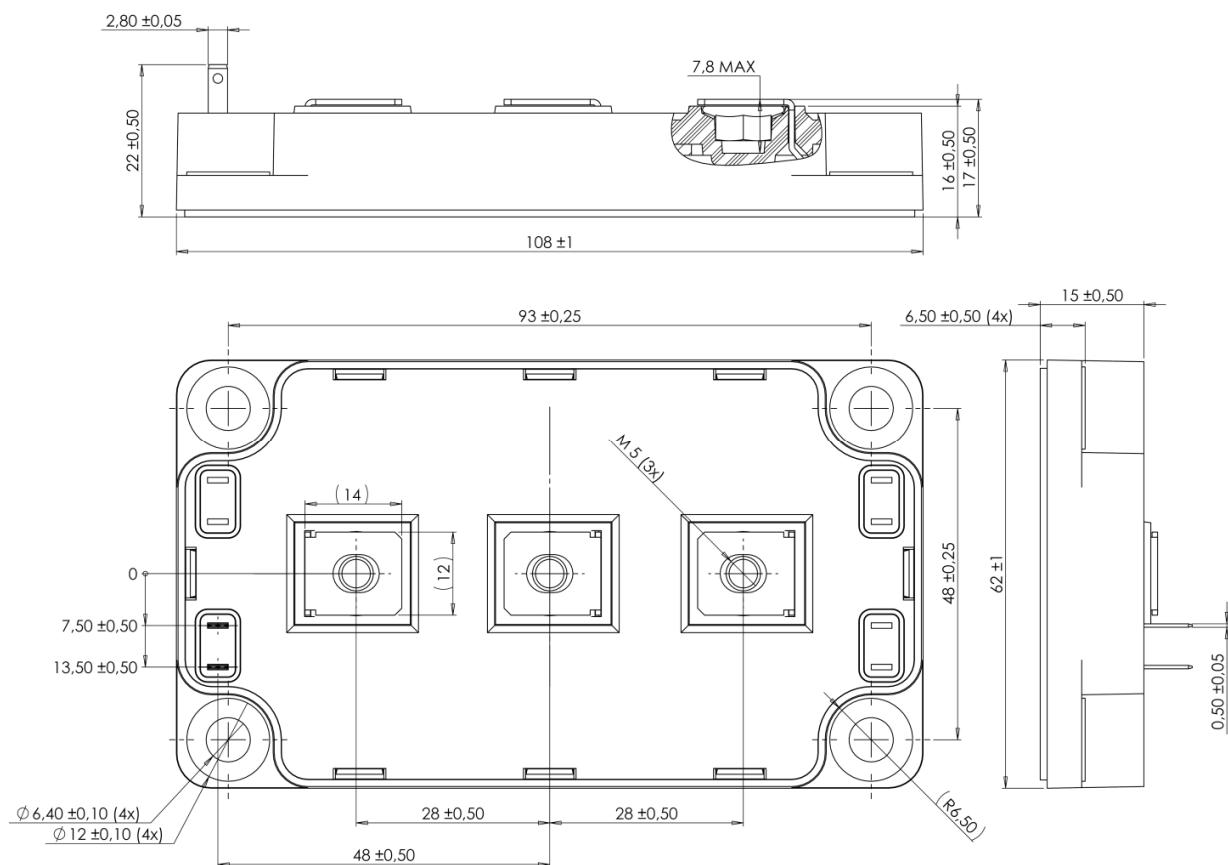
Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit
C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}$ $V_{DS} = 25\text{V}$ $f = 1\text{MHz}$		28.9			nF
C_{oss}	Output Capacitance			9.32			
C_{rss}	Reverse Transfer Capacitance			0.58			
Q_g	Total gate Charge	$V_{GS} = 10\text{V}$ $V_{Bus} = 100\text{V}$ $I_D = 372\text{A}$		560			nC
Q_{gs}	Gate – Source Charge			212			
Q_{gd}	Gate – Drain Charge			268			
$T_{d(on)}$	Turn-on Delay Time	Inductive switching @ 125°C $V_{GS} = 15\text{V}$ $V_{Bus} = 133\text{V}$ $I_D = 372\text{A}$		32			ns
T_r	Rise Time			64			
$T_{d(off)}$	Turn-off Delay Time			88			
T_f	Fall Time		$R_G = 1.2\Omega$	116			
E_{on}	Turn-on Switching Energy	Inductive switching @ 25°C $V_{GS} = 15\text{V}$, $V_{Bus} = 133\text{V}$ $I_D = 372\text{A}$, $R_G = 1.2\Omega$		3396			μJ
E_{off}	Turn-off Switching Energy			3716			
E_{on}	Turn-on Switching Energy		Inductive switching @ 125°C $V_{GS} = 15\text{V}$, $V_{Bus} = 133\text{V}$ $I_D = 372\text{A}$, $R_G = 1.2\Omega$	3744			μJ
E_{off}	Turn-off Switching Energy			3944			

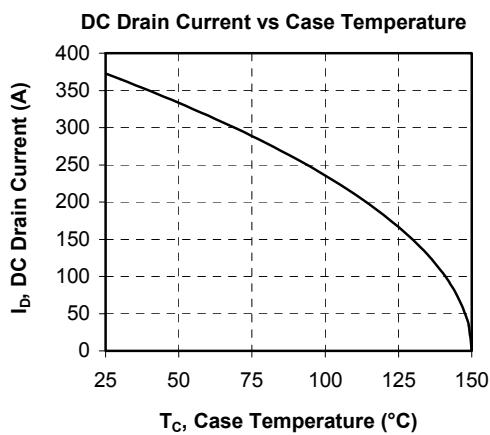
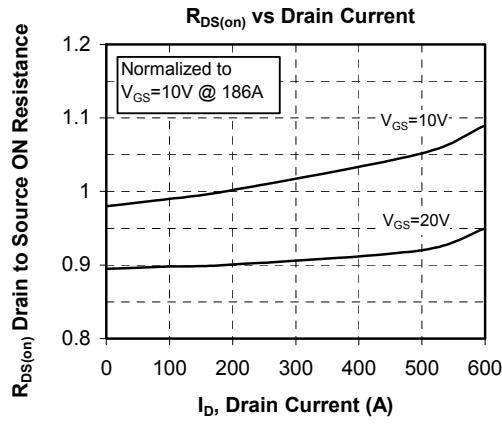
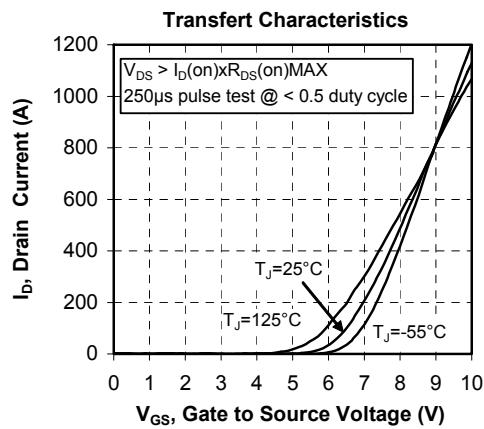
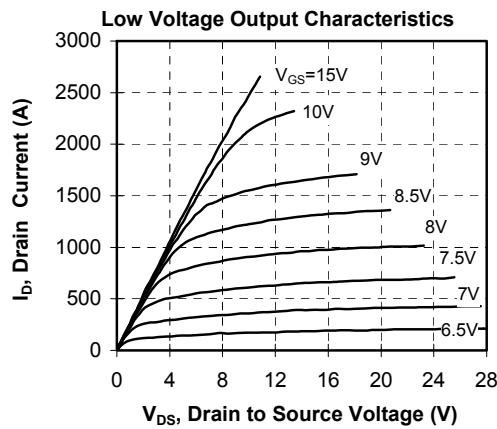
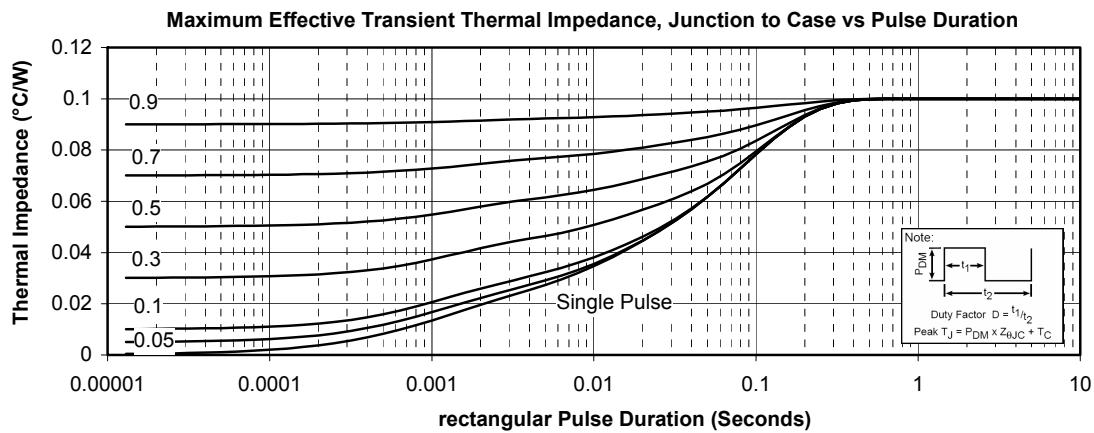
Chopper diode ratings and characteristics

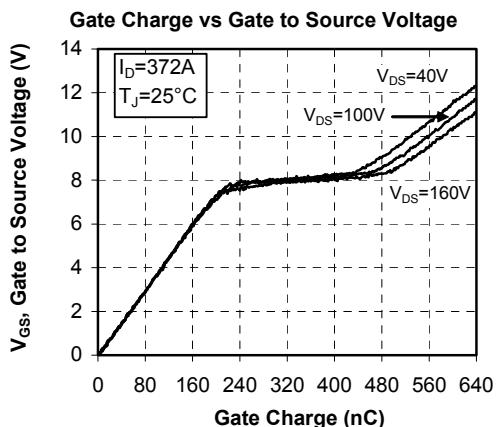
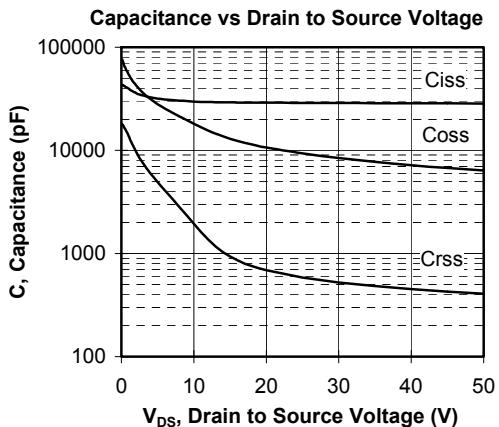
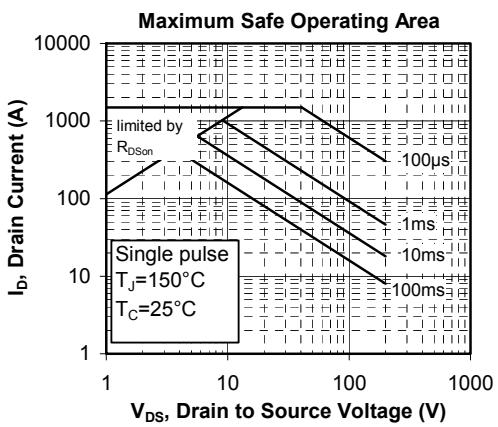
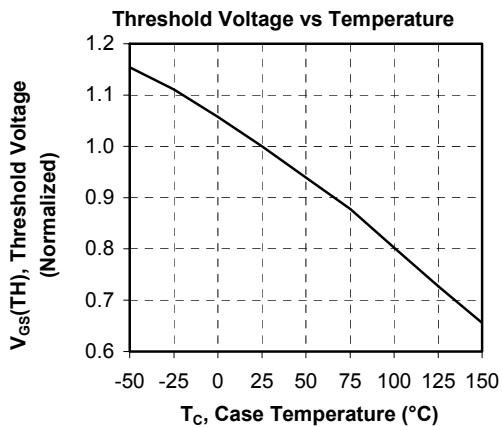
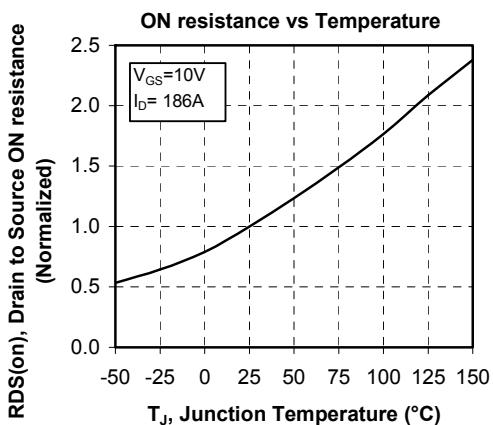
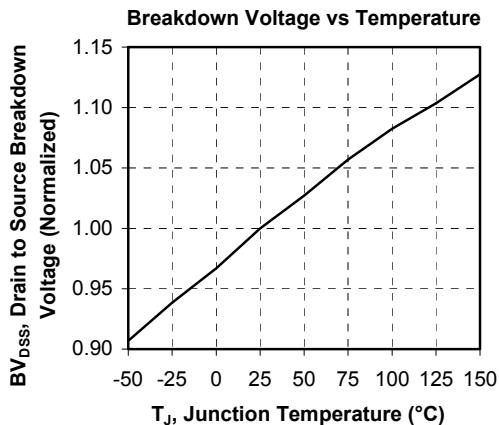
Symbol	Characteristic	Test Conditions		Min	Typ	Max	Unit	
V_{RRM}	Maximum Peak Repetitive Reverse Voltage	$V_R = 200\text{V}$	$T_j = 25^\circ\text{C}$	200			V	
I_{RM}	Maximum Reverse Leakage Current		$T_j = 125^\circ\text{C}$			250	μA	
I_F	DC Forward Current	$T_c = 80^\circ\text{C}$		300			A	
V_F	Diode Forward Voltage	$I_F = 300\text{A}$			1	1.1	V	
		$I_F = 600\text{A}$			1.4			
		$I_F = 300\text{A}$	$T_j = 125^\circ\text{C}$		0.9			
t_{rr}	Reverse Recovery Time	$I_F = 300\text{A}$ $V_R = 133\text{V}$ $di/dt = 600\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$		60		ns	
			$T_j = 125^\circ\text{C}$		110			
Q_{rr}	Reverse Recovery Charge		$T_j = 25^\circ\text{C}$		600		nC	
			$T_j = 125^\circ\text{C}$		2520			

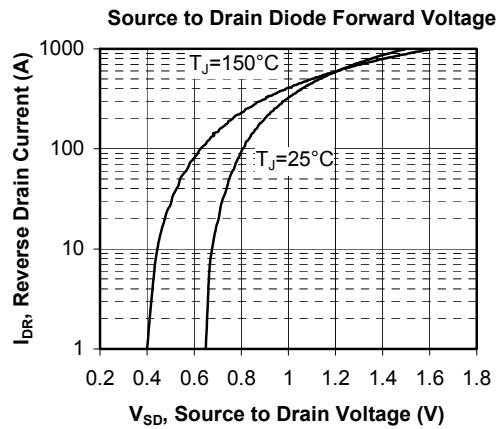
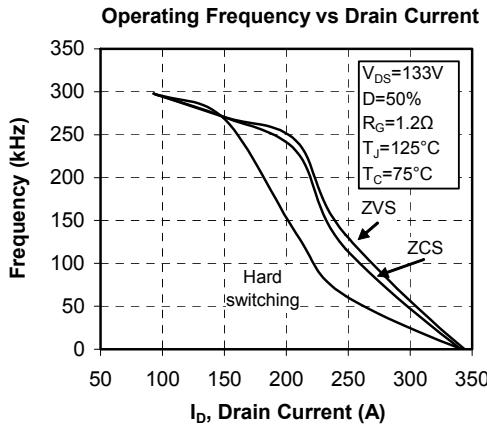
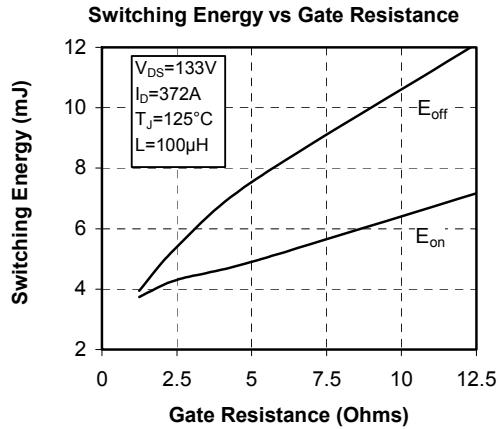
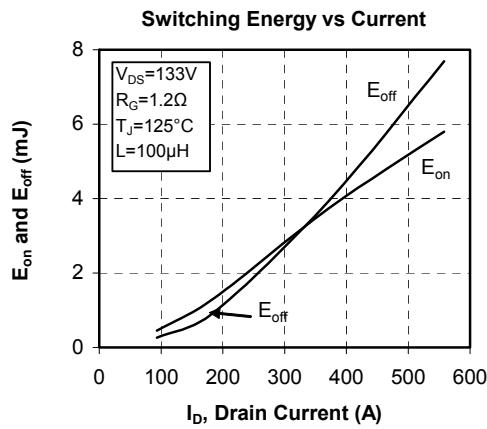
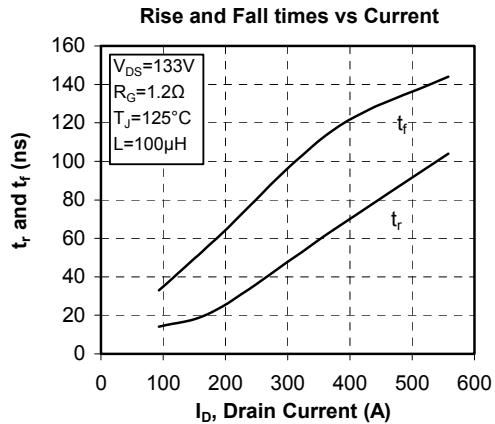
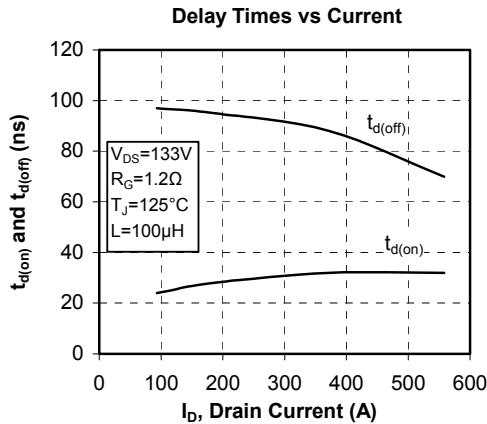
Thermal and package characteristics
Symbol **Characteristic**

			Min	Typ	Max	Unit
R_{thJC}	Junction to Case Thermal Resistance	Transistor			0.1	$^{\circ}\text{C}/\text{W}$
		Diode			0.2	
V_{ISOL}	RMS Isolation Voltage, any terminal to case t = 1 min, 50/60Hz		4000			V
T_J	Operating junction temperature range		-40		150	$^{\circ}\text{C}$
T_{STG}	Storage Temperature Range		-40		125	
T_C	Operating Case Temperature		-40		100	
Torque	Mounting torque	To heatsink	M6	3	5	N.m
		For terminals	M5	2	3.5	
Wt	Package Weight				300	g

SP6 Package outline (dimensions in mm)

 See application note APT0601 - Mounting Instructions for SP6 Power Modules on www.microsemi.com

Typical Performance Curve






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