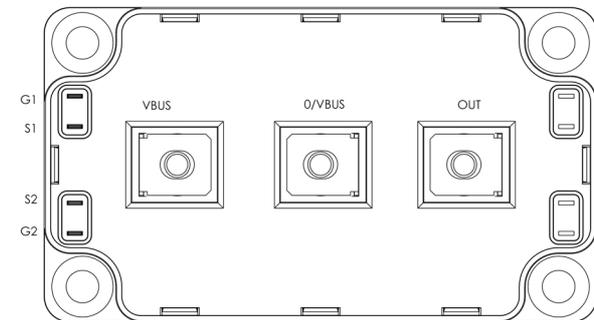
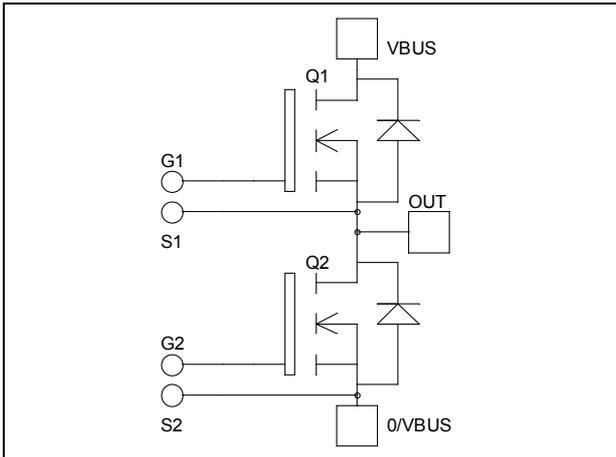


Phase leg
MOSFET Power Module

$V_{DSS} = 1200V$
 $R_{DSon} = 150m\Omega \text{ typ @ } T_j = 25^\circ C$
 $I_D = 60A \text{ @ } T_c = 25^\circ C$


Application

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

Features

- Power MOS 7[®] FREDFETs
 - Low R_{DSon}
 - Low input and Miller capacitance
 - Low gate charge
 - Fast intrinsic reverse diode
 - 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	1200	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	60
		$T_c = 80^\circ C$	45
I_{DM}	Pulsed Drain current	240	A
V_{GS}	Gate - Source Voltage	± 30	V
R_{DSon}	Drain - Source ON Resistance	175	$m\Omega$
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	1250
I_{AR}	Avalanche current (repetitive and non repetitive)	22	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	$V_{GS} = 0V, V_{DS} = 1200V$			500	μA
		$V_{GS} = 0V, V_{DS} = 1000V$	$T_j = 25^\circ\text{C}$		3000	
$R_{DS(on)}$	Drain – Source on Resistance	$V_{GS} = 10V, I_D = 30A$		150	175	$\text{m}\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}, I_D = 10\text{mA}$	3		5	V
I_{GSS}	Gate – Source Leakage Current	$V_{GS} = \pm 30V, V_{DS} = 0V$			± 250	nA

Dynamic Characteristics

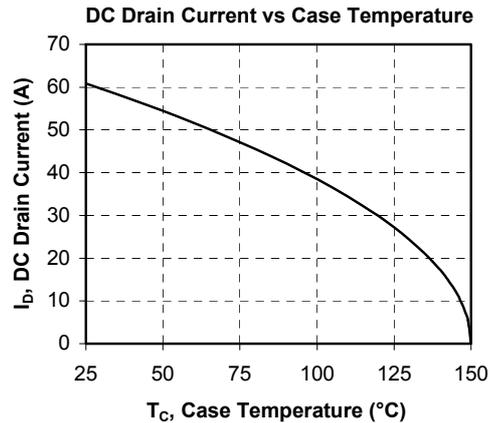
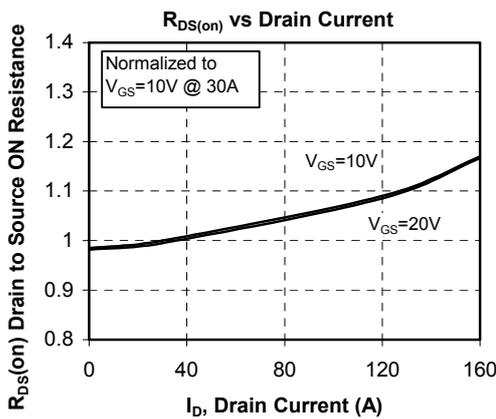
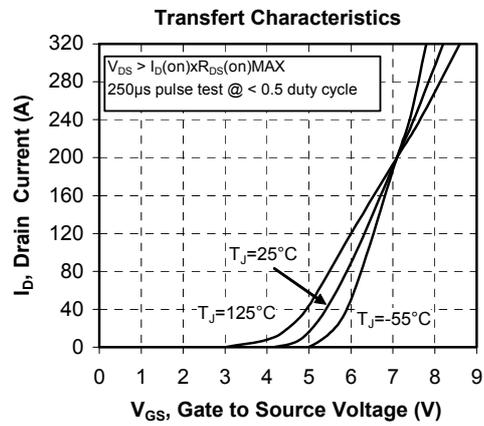
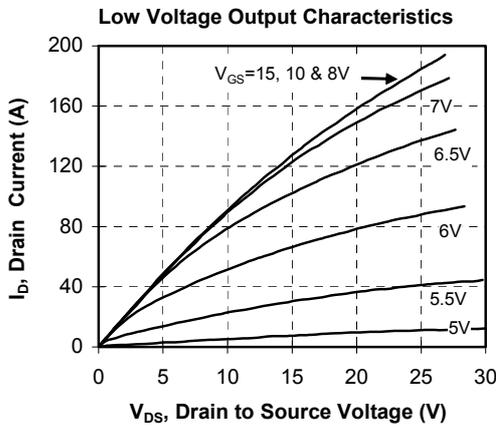
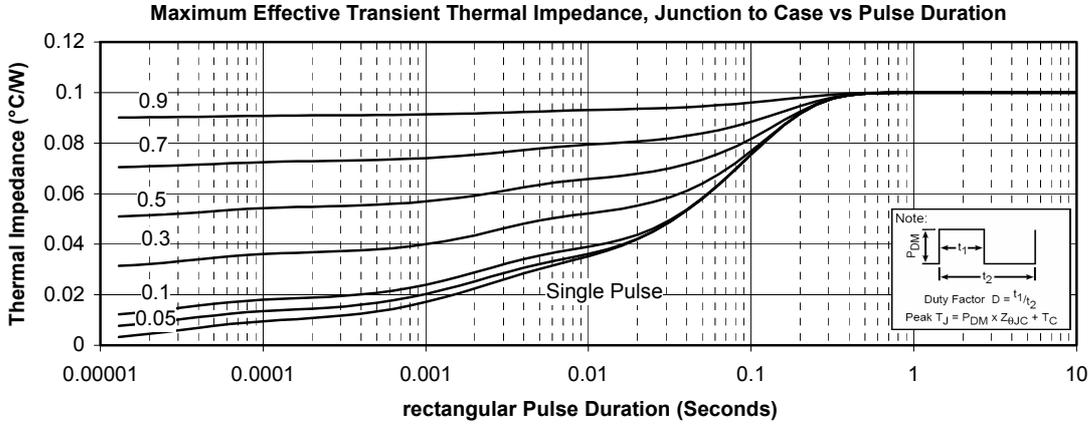
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{iss}	Input Capacitance	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1\text{MHz}$		20.6		nF
C_{oss}	Output Capacitance			3.08		
C_{rss}	Reverse Transfer Capacitance			0.52		
Q_g	Total gate Charge	$V_{GS} = 10V$ $V_{Bus} = 600V$ $I_D = 60A$		748		nC
Q_{gs}	Gate – Source Charge			96		
Q_{gd}	Gate – Drain Charge			480		
$T_{d(on)}$	Turn-on Delay Time	Inductive switching @ 125°C $V_{GS} = 15V$ $V_{Bus} = 800V$ $I_D = 60A$ $R_G = 1.2\Omega$		20		ns
T_r	Rise Time			15		
$T_{d(off)}$	Turn-off Delay Time			160		
T_f	Fall Time			45		
E_{on}	Turn-on Switching Energy	Inductive switching @ 25°C $V_{GS} = 15V, V_{Bus} = 800V$ $I_D = 60A, R_G = 1.2\Omega$		3.96		mJ
E_{off}	Turn-off Switching Energy			2.74		
E_{on}	Turn-on Switching Energy	Inductive switching @ 125°C $V_{GS} = 15V, V_{Bus} = 800V$ $I_D = 60A, R_G = 1.2\Omega$		6.26		mJ
E_{off}	Turn-off Switching Energy			3.43		

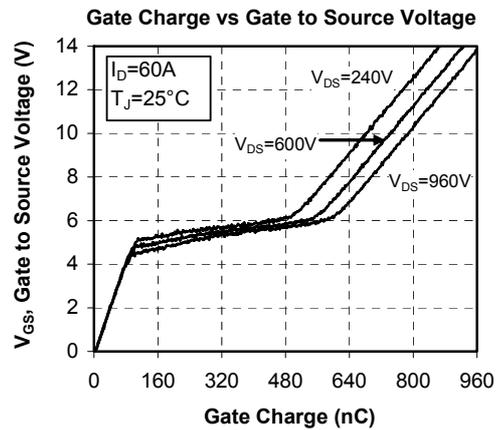
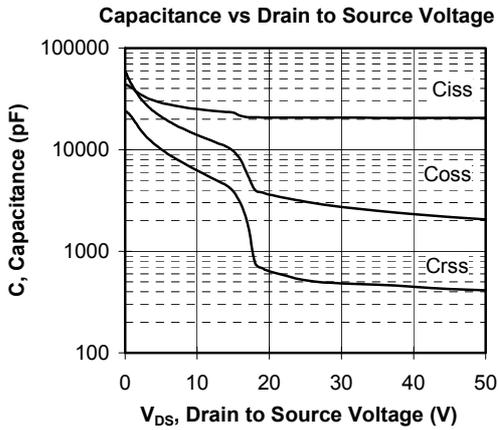
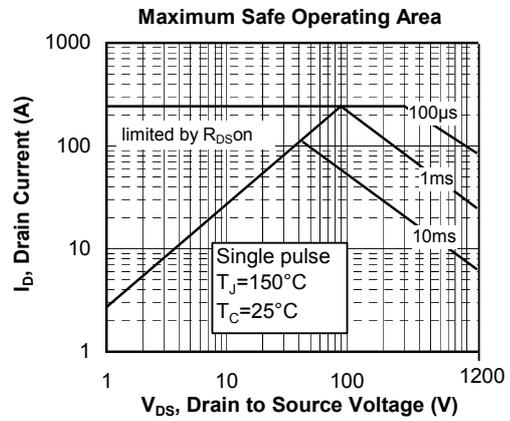
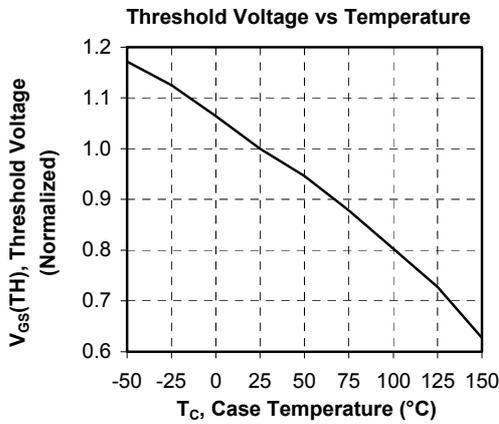
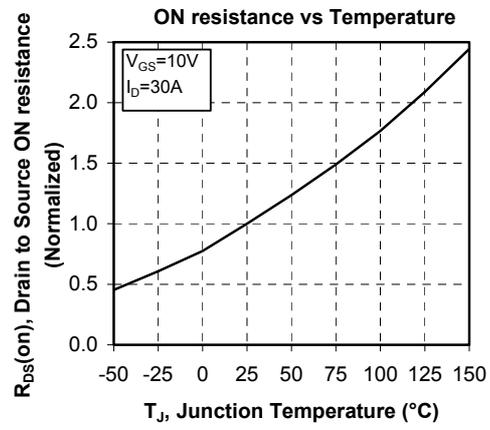
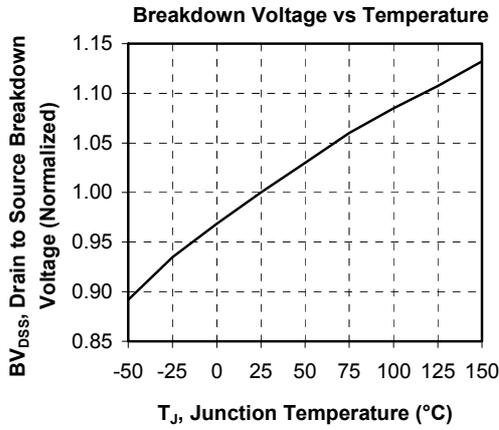
Source - Drain diode ratings and characteristics

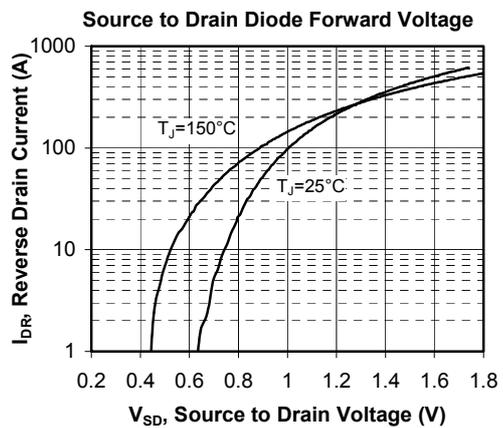
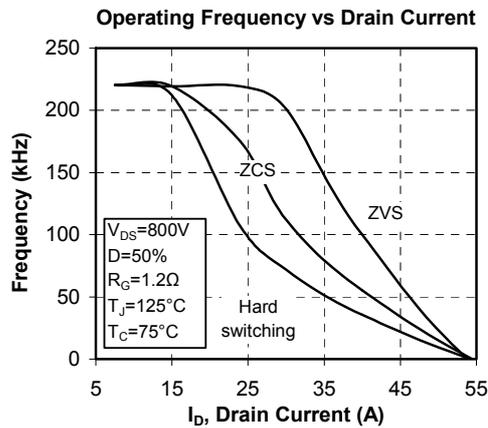
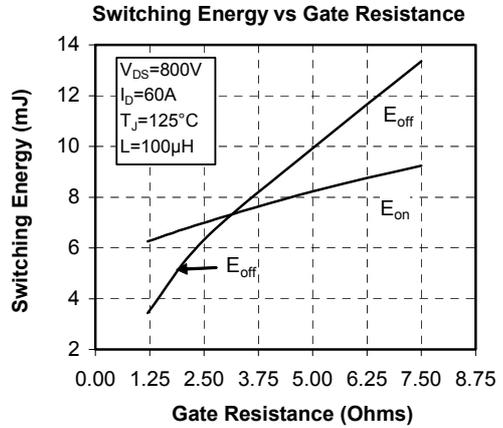
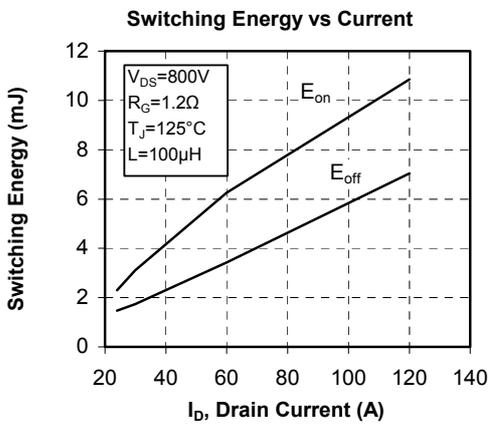
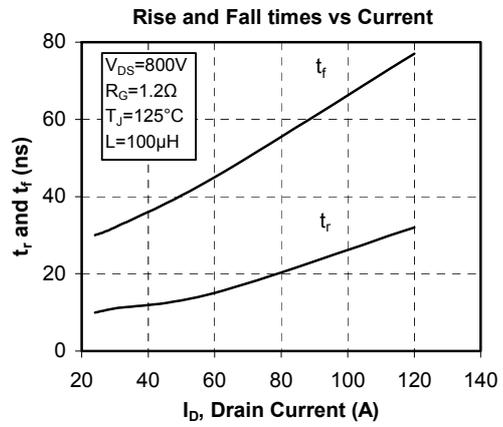
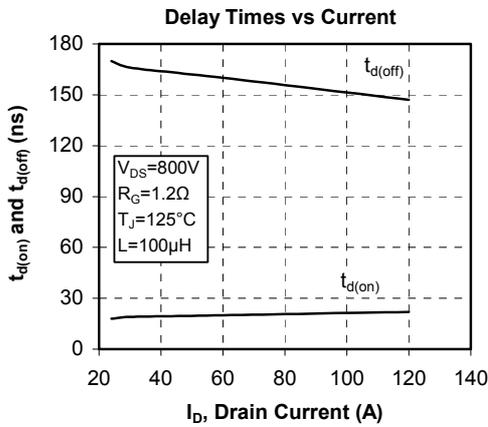
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit	
I_S	Continuous Source current (Body diode)	$T_c = 25^\circ\text{C}$			60	A	
		$T_c = 80^\circ\text{C}$			45		
V_{SD}	Diode Forward Voltage	$V_{GS} = 0V, I_S = -60A$			1.3	V	
dv/dt	Peak Diode Recovery ①				18	V/ns	
t_{rr}	Reverse Recovery Time	$I_S = -60A$ $V_R = 600V$ $di/dt = 400A/\mu\text{s}$	$T_j = 25^\circ\text{C}$			320	ns
			$T_j = 125^\circ\text{C}$			650	
Q_{rr}	Reverse Recovery Charge	$I_S = -60A$ $V_R = 600V$ $di/dt = 400A/\mu\text{s}$	$T_j = 25^\circ\text{C}$		8	μC	
			$T_j = 125^\circ\text{C}$		28		

① dv/dt numbers reflect the limitations of the circuit rather than the device itself.

$I_S \leq -60A$ $di/dt \leq 700A/\mu\text{s}$ $V_R \leq V_{DSS}$ $T_j \leq 150^\circ\text{C}$

Typical Performance Curve






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