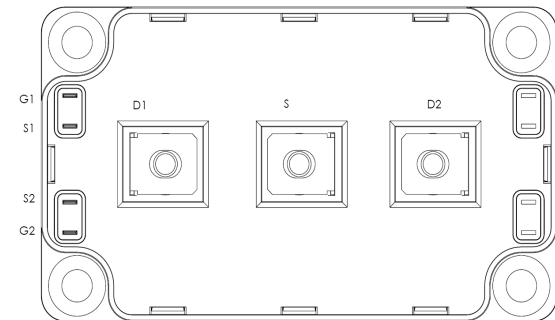
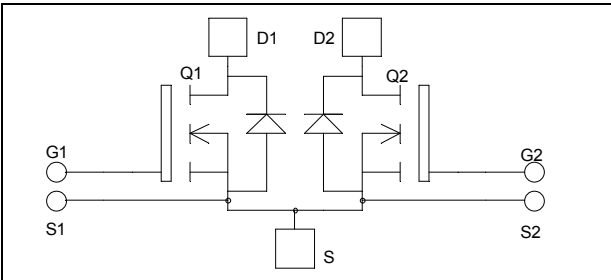


Dual Common Source MOSFET Power Module

$V_{DSS} = 1000V$
 $R_{DSon} = 90m\Omega \text{ typ @ } T_j = 25^\circ C$
 $I_D = 78A \text{ @ } T_c = 25^\circ C$



Application

- AC Switches
- Switched Mode Power Supplies
- Uninterruptible Power Supplies

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	1000	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	78
		$T_c = 80^\circ C$	59
I_{DM}	Pulsed Drain current	312	A
V_{GS}	Gate - Source Voltage	± 30	
R_{DSon}	Drain - Source ON Resistance	105	m Ω
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	1250
I_{AR}	Avalanche current (repetitive and non repetitive)	25	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	$V_{GS} = 0V, V_{DS} = 1000V$			400	μA
		$V_{GS} = 0V, V_{DS} = 800V$	$T_j = 25^\circ\text{C}$			
$R_{DS(on)}$	Drain – Source on Resistance	$V_{GS} = 10V, I_D = 39A$		90	105	$\text{m}\Omega$
$V_{GS(th)}$	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

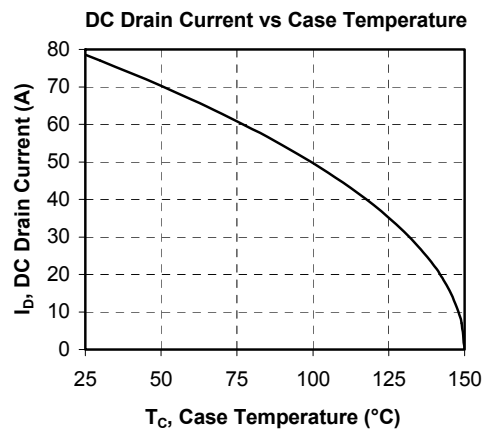
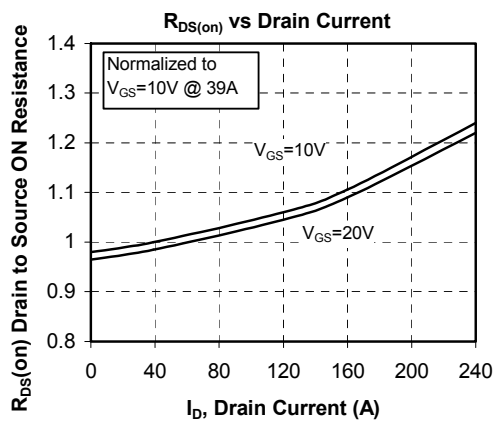
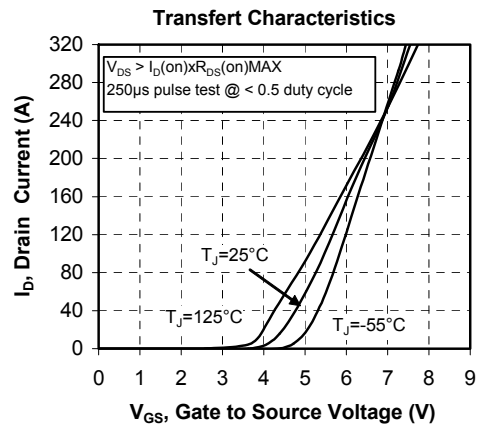
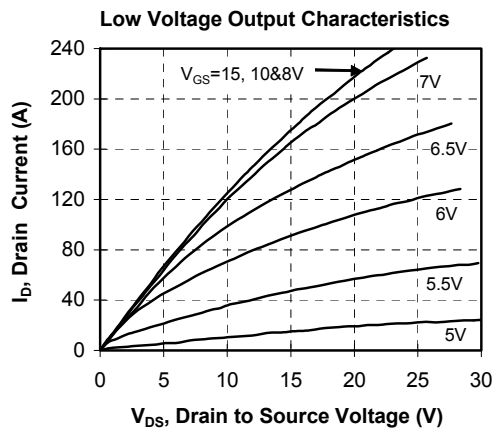
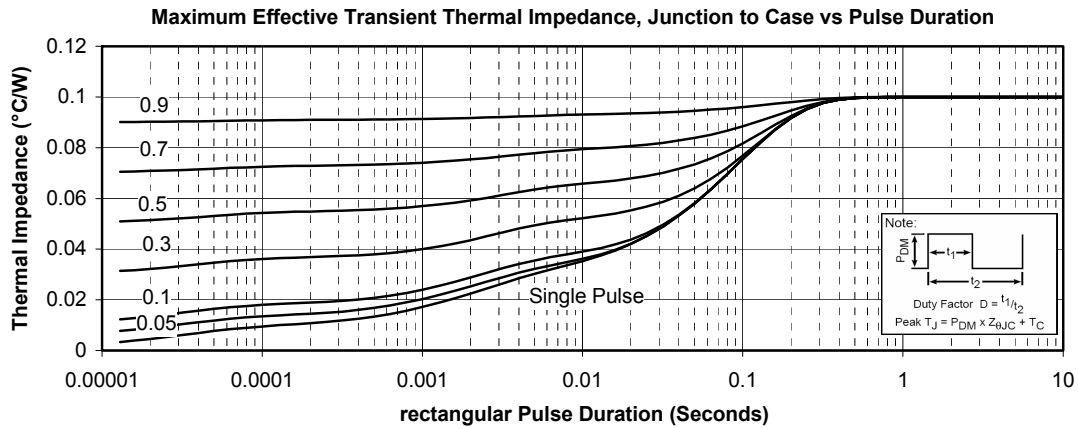
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{iss}	Input Capacitance	$V_{GS} = 0V$ $V_{DS} = 25V$ $f = 1\text{MHz}$		20.7		nF
C_{oss}	Output Capacitance			3.5		
C_{rss}	Reverse Transfer Capacitance			0.64		
Q_g	Total gate Charge	$V_{GS} = 10V$ $V_{Bus} = 500V$ $I_D = 78A$		744		nC
Q_{gs}	Gate – Source Charge			96		
Q_{gd}	Gate – Drain Charge			488		
$T_{d(on)}$	Turn-on Delay Time	Inductive switching @ 125°C $V_{GS} = 15V$ $V_{Bus} = 670V$ $I_D = 78A$ $R_G = 1.2\Omega$		18		ns
T_r	Rise Time			12		
$T_{d(off)}$	Turn-off Delay Time			155		
T_f	Fall Time			40		
E_{on}	Turn-on Switching Energy	Inductive switching @ 25°C $V_{GS} = 15V, V_{Bus} = 670V$ $I_D = 78A, R_G = 1.2\Omega$		3.6		mJ
E_{off}	Turn-off Switching Energy			2.5		
E_{on}	Turn-on Switching Energy	Inductive switching @ 125°C $V_{GS} = 15V, V_{Bus} = 670V$ $I_D = 78A, R_G = 1.2\Omega$		5.7		mJ
E_{off}	Turn-off Switching Energy			3.1		

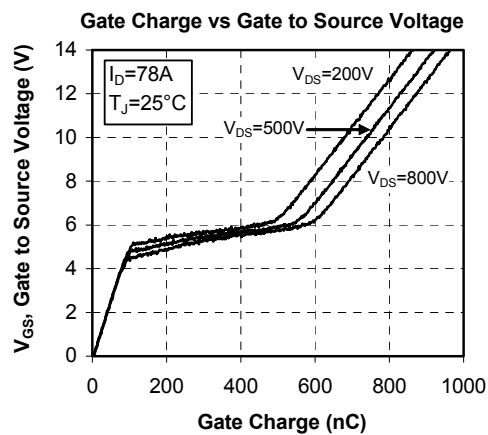
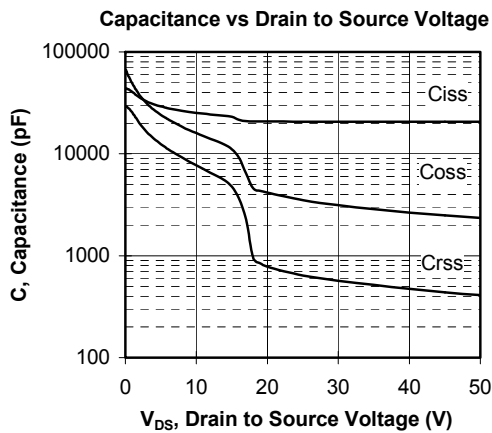
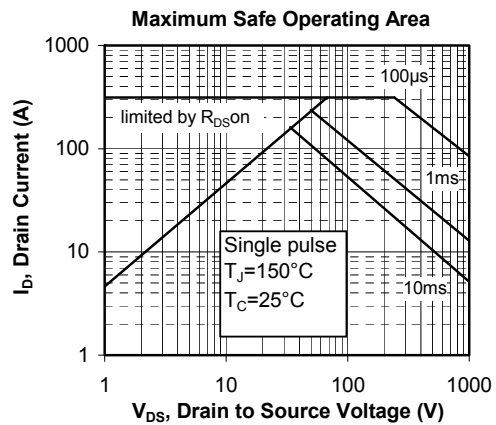
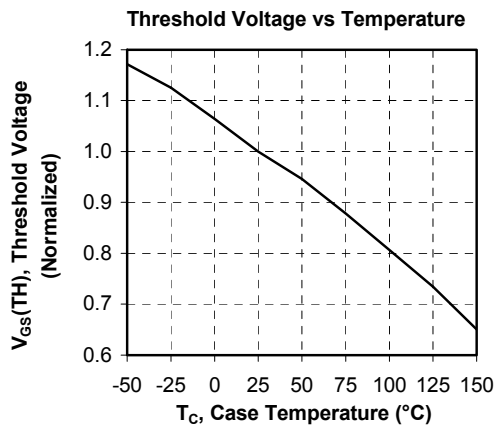
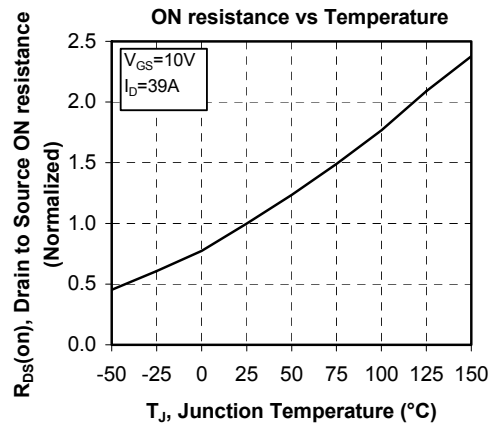
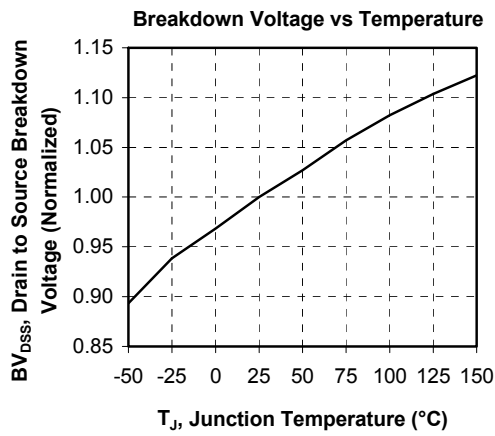
Source - Drain diode ratings and characteristics

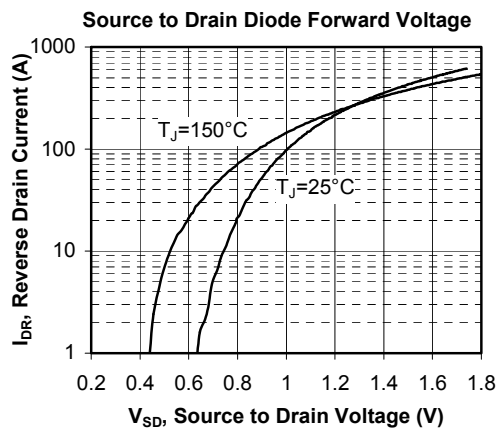
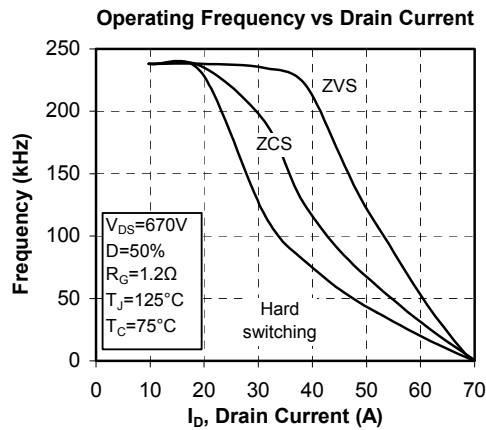
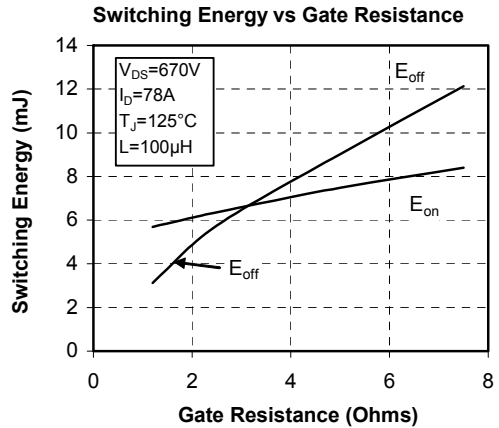
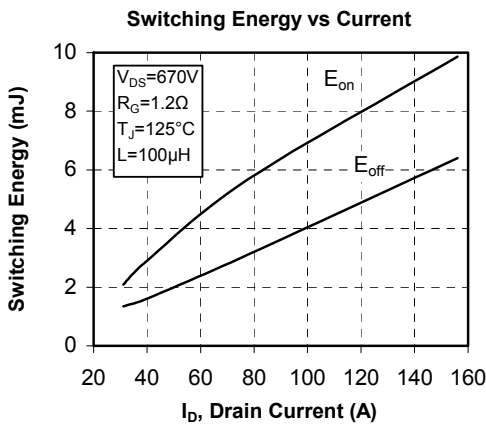
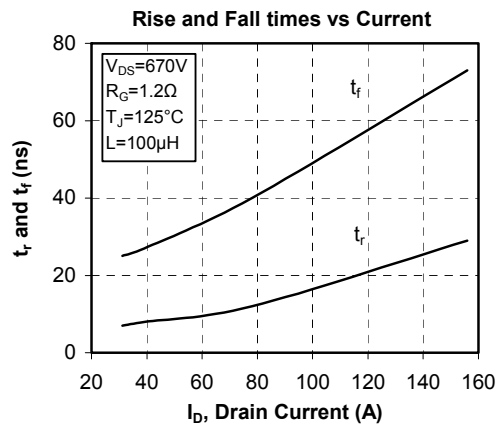
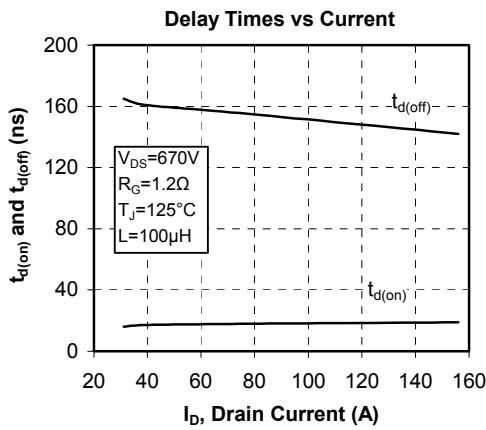
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
I_S	Continuous Source current (Body diode)	$T_c = 25^\circ\text{C}$			78	A
		$T_c = 80^\circ\text{C}$			59	
V_{SD}	Diode Forward Voltage	$V_{GS} = 0V, I_S = -78A$			1.3	V
dv/dt	Peak Diode Recovery ①				10	V/ns
t_{rr}	Reverse Recovery Time	$I_S = -78A, V_R = 670V$ $di_S/dt = 400A/\mu\text{s}$		1170		ns
Q_{rr}	Reverse Recovery Charge			65.1		μC

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

 $I_S \leq -78A$ $di/dt \leq 700A/\mu\text{s}$ $V_R \leq V_{DSS}$ $T_j \leq 150^\circ\text{C}$

Typical Performance Curve






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