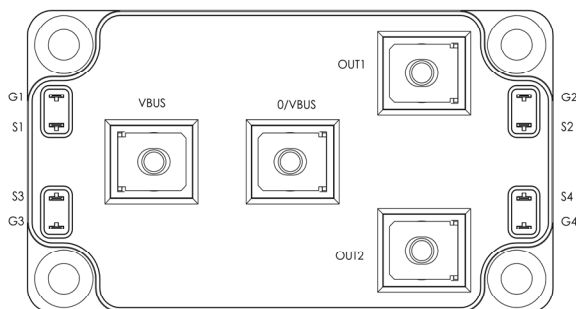
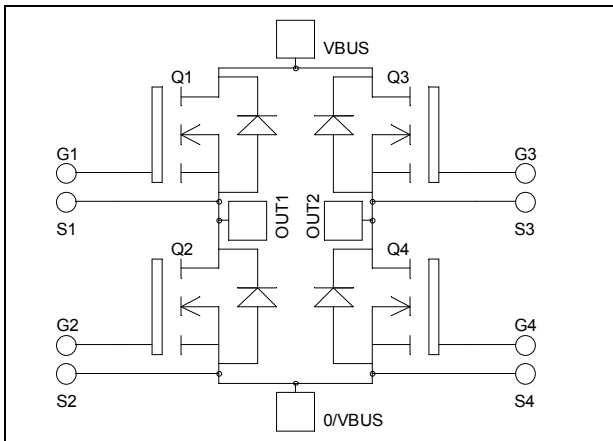


Full - Bridge MOSFET Power Module

$V_{DSS} = 500V$
 $R_{DSon} = 38m\Omega \text{ typ @ } T_j = 25^\circ C$
 $I_D = 90A \text{ @ } T_c = 25^\circ C$



Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{DSS}	Drain - Source Breakdown Voltage	500	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	90
		$T_c = 80^\circ C$	67
I_{DM}	Pulsed Drain current	360	A
V_{GS}	Gate - Source Voltage	± 30	V
R_{DSon}	Drain - Source ON Resistance	45	$m\Omega$
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	694
I_{AR}	Avalanche current (repetitive and non repetitive)	46	A
E_{AR}	Repetitive Avalanche Energy	50	mJ
E_{AS}	Single Pulse Avalanche Energy	2500	

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


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} = 500V			200	μA
		T _j = 25°C				
		V _{GS} = 0V, V _{DS} = 400V			1000	
		T _j = 125°C				
R _{DS(on)}	Drain – Source on Resistance	V _{GS} = 10V, I _D = 45A		38	45	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{GS} = V _{DS} , I _D = 5mA	3		5	V
I _{GSS}	Gate – Source Leakage Current	V _{GS} = ±30 V, V _{DS} = 0V			±150	nA

Dynamic Characteristics

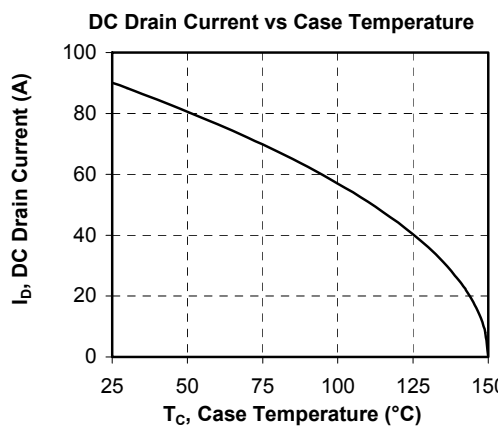
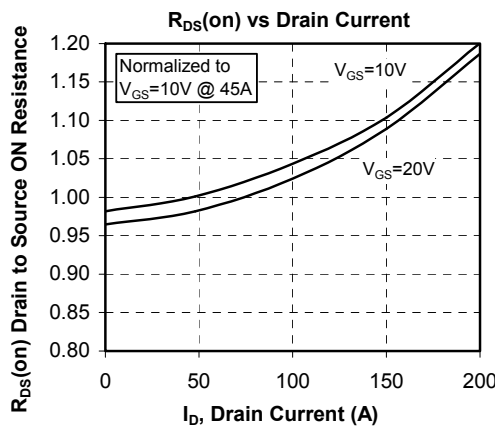
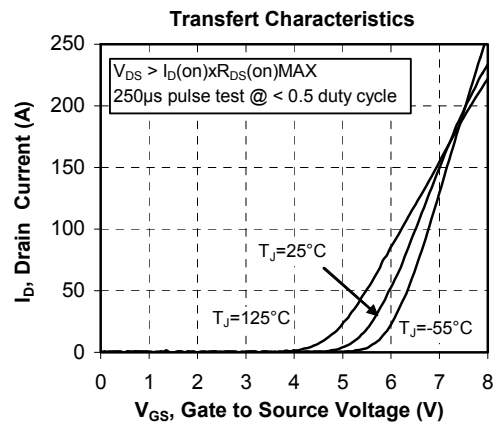
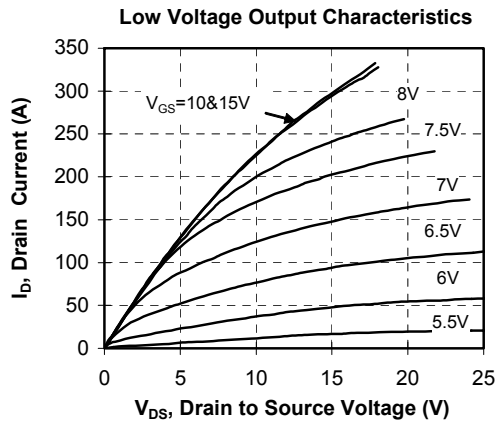
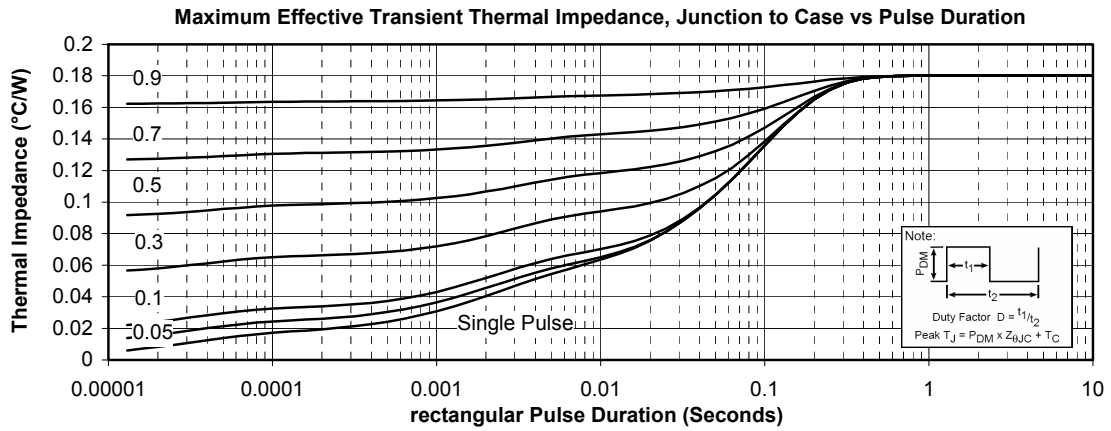
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C _{iss}	Input Capacitance	V _{GS} = 0V		11.2		nF
C _{oss}	Output Capacitance	V _{DS} = 25V		2.4		
C _{rss}	Reverse Transfer Capacitance	f = 1MHz		0.18		
Q _g	Total gate Charge	V _{GS} = 10V		246		nC
Q _{gs}	Gate – Source Charge	V _{Bus} = 250V		66		
Q _{gd}	Gate – Drain Charge	I _D = 90A		130		
T _{d(on)}	Turn-on Delay Time	Inductive switching @ 125°C V _{GS} = 15V V _{Bus} = 333V I _D = 90A R _G = 2Ω		18		ns
T _r	Rise Time			35		
T _{d(off)}	Turn-off Delay Time			87		
T _f	Fall Time			77		
E _{on}	Turn-on Switching Energy	Inductive switching @ 25°C V _{GS} = 15V, V _{Bus} = 333V I _D = 90A, R _G = 2Ω		1510		μJ
E _{off}	Turn-off Switching Energy			1452		
E _{on}	Turn-on Switching Energy	Inductive switching @ 125°C V _{GS} = 15V, V _{Bus} = 333V I _D = 90A, R _G = 2Ω		2482		μJ
E _{off}	Turn-off Switching Energy			1692		

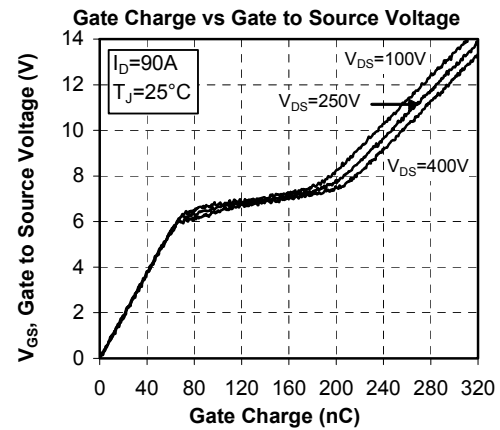
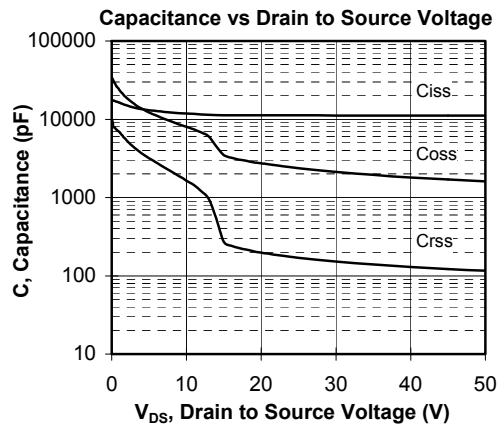
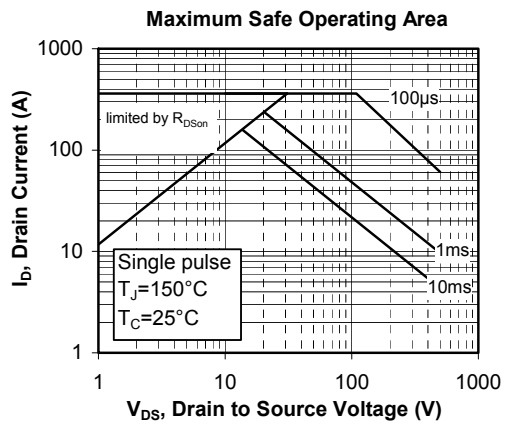
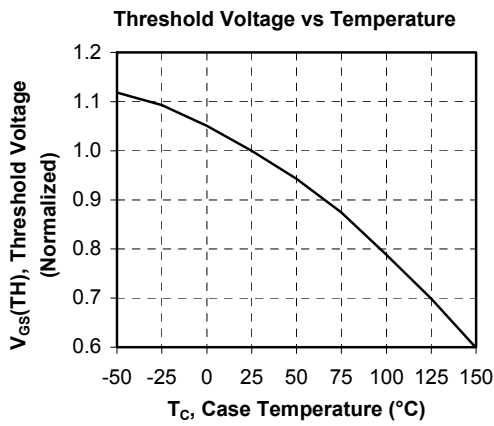
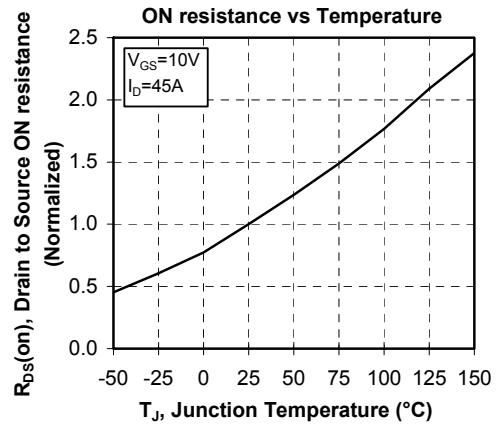
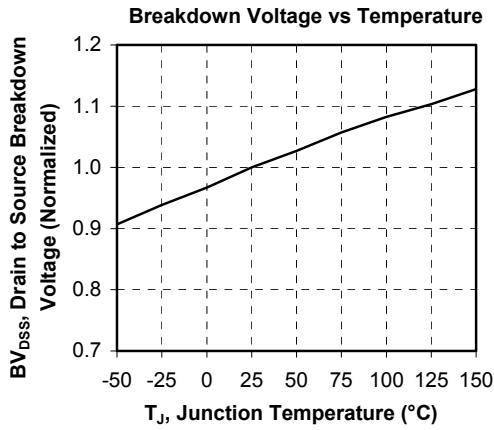
Source - Drain diode ratings and characteristics

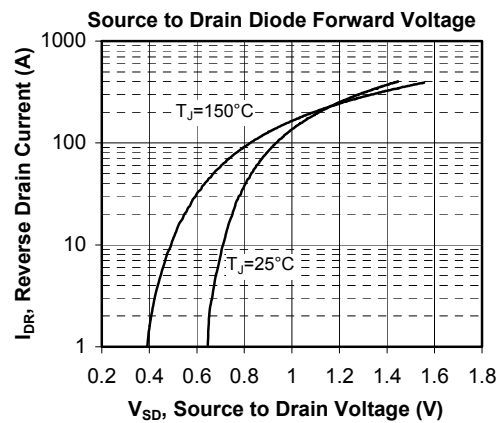
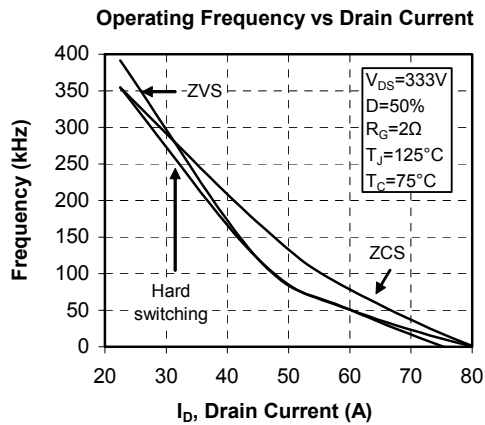
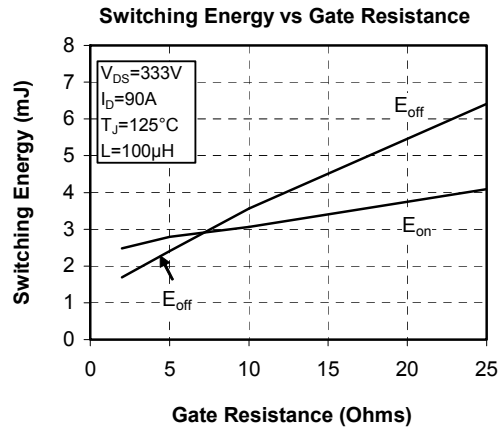
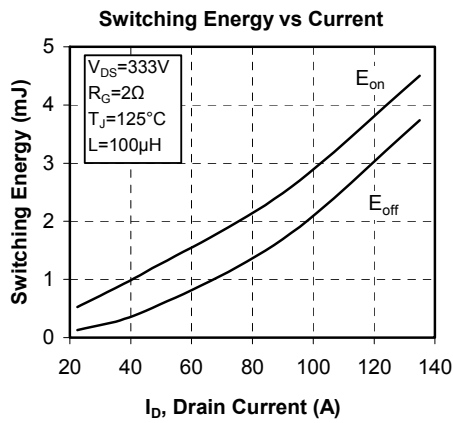
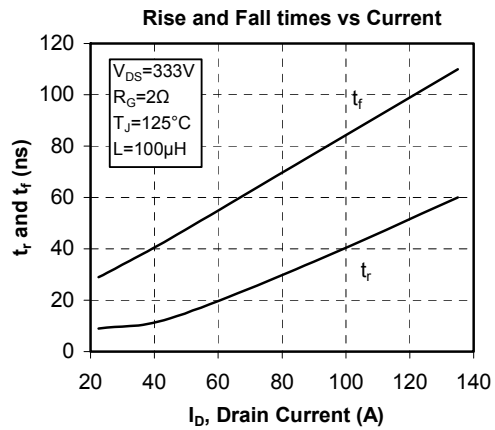
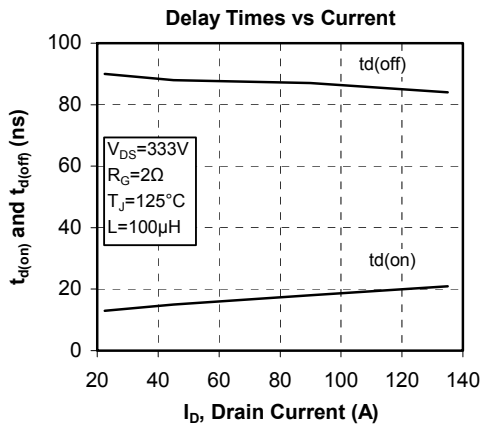
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
I _S	Continuous Source current (Body diode)	T _c = 25°C			90	A
		T _c = 80°C			67	
V _{SD}	Diode Forward Voltage	V _{GS} = 0V, I _S = - 90A			1.3	V
dv/dt	Peak Diode Recovery ①				15	V/ns
t _{rr}	Reverse Recovery Time	I _S = - 90A V _R = 333V di _S /dt = 200A/μs	T _j = 25°C		233	ns
			T _j = 125°C		499	
Q _{rr}	Reverse Recovery Charge	I _S = - 90A V _R = 333V di _S /dt = 200A/μs	T _j = 25°C		3.8	μC
			T _j = 125°C		11.4	

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

$$I_S \leq -90\text{A} \quad di/dt \leq 700\text{A}/\mu\text{s} \quad V_R \leq V_{DSS} \quad T_j \leq 150^\circ\text{C}$$

Typical Performance Curve






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