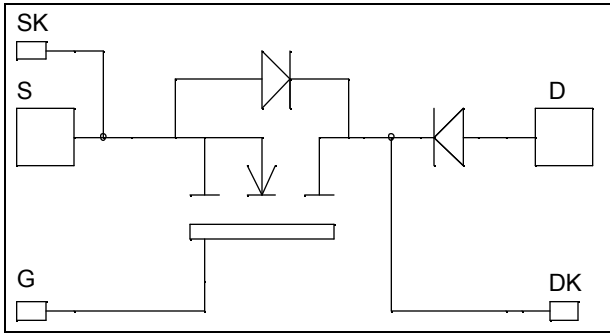


*Single switch
with Series diode
MOSFET Power Module*

$V_{DSS} = 1000V$
 $R_{DSon} = 45m\Omega$ max @ $T_j = 25^\circ C$
 $I_D = 215A$ @ $T_c = 25^\circ C$

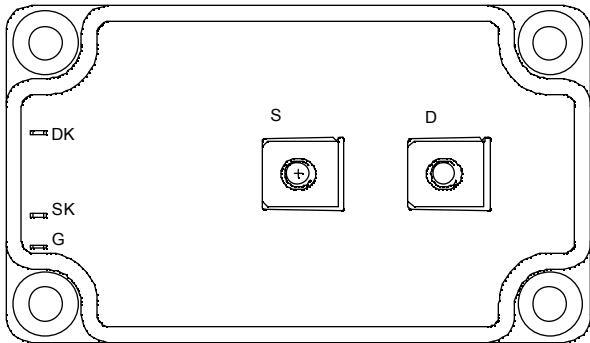


Application

- Zero Current Switching resonant mode

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
- AIN substrate for improved thermal performance



Benefits

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

Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{DSS}	Drain - Source Breakdown Voltage	1000	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	215
		$T_c = 80^\circ C$	160
I_{DM}	Pulsed Drain current	860	A
V_{GS}	Gate - Source Voltage	± 30	V
R_{DSon}	Drain - Source ON Resistance	45	m Ω
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	5000
I_{AR}	Avalanche current (repetitive and non repetitive)	30	A
E_{AR}	Repetitive Avalanche Energy	50	mJ
E_{AS}	Single Pulse Avalanche Energy	3200	

CAUTION: These Devices are sensitive to Electrostatic Discharge. Proper Handling Procedures Should Be Followed.

All ratings @ $T_j = 25^\circ\text{C}$ unless otherwise specified

Electrical Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
BV_{DSS}	Drain - Source Breakdown Voltage	$V_{GS} = 0\text{V}, I_D = 1.5\text{mA}$	1000			V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0\text{V}, V_{DS} = 1000\text{V}$			600	μA
		$V_{GS} = 0\text{V}, V_{DS} = 800\text{V}$			3	mA
$R_{DS(on)}$	Drain - Source on Resistance	$V_{GS} = 10\text{V}, I_D = 107.5\text{A}$			45	$\text{m}\Omega$
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}, I_D = 30\text{mA}$	3		5	V
I_{GSS}	Gate - Source Leakage Current	$V_{GS} = \pm 30\text{V}, V_{DS} = 0\text{V}$			± 600	nA

Dynamic Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{iss}	Input Capacitance	$V_{GS} = 0\text{V}$		42.7		nF
C_{oss}	Output Capacitance	$V_{DS} = 25\text{V}$		7.6		
C_{rss}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		1.3		
Q_g	Total gate Charge	$V_{GS} = 10\text{V}$ $V_{Bus} = 500\text{V}$ $I_D = 215\text{A}$		1602		nC
Q_{gs}	Gate - Source Charge			204		
Q_{gd}	Gate - Drain Charge			1038		
$T_{d(on)}$	Turn-on Delay Time	Inductive switching @ 125°C $V_{GS} = 15\text{V}$ $V_{Bus} = 670\text{V}$ $I_D = 215\text{A}$ $R_G = 0.5\Omega$		18		ns
T_r	Rise Time			14		
$T_{d(off)}$	Turn-off Delay Time			140		
T_f	Fall Time			55		
E_{on}	Turn-on Switching Energy ❶	Inductive switching @ 25°C $V_{GS} = 15\text{V}, V_{Bus} = 670\text{V}$ $I_D = 215\text{A}, R_G = 0.5\Omega$		7.2		mJ
E_{off}	Turn-off Switching Energy ❷			4.3		
E_{on}	Turn-on Switching Energy ❶	Inductive switching @ 125°C $V_{GS} = 15\text{V}, V_{Bus} = 670\text{V}$ $I_D = 215\text{A}, R_G = 0.5\Omega$		12		mJ
E_{off}	Turn-off Switching Energy ❷			5.8		

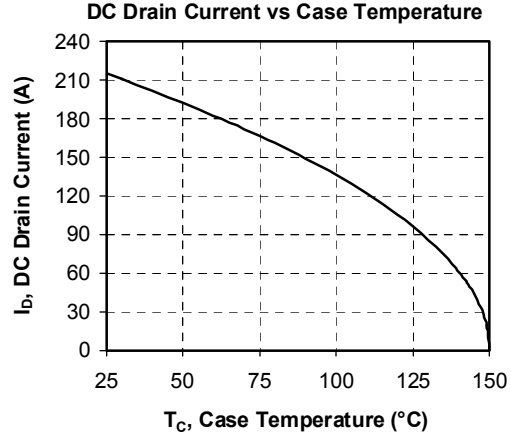
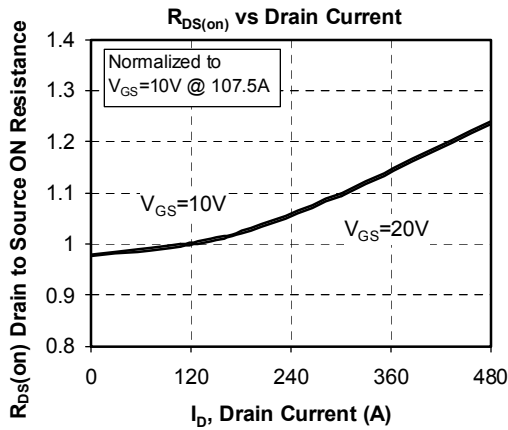
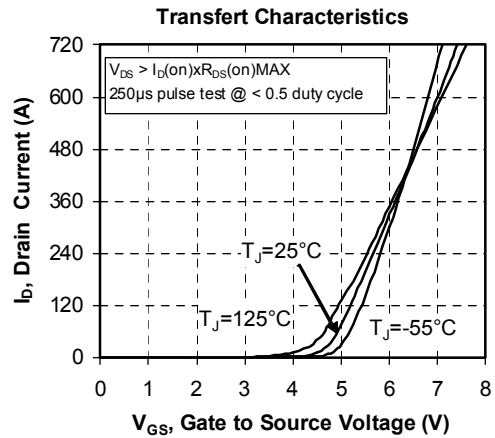
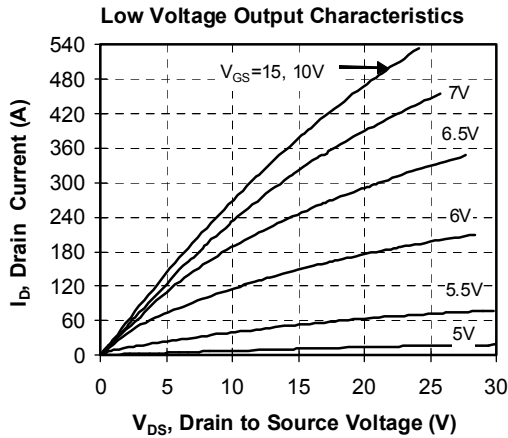
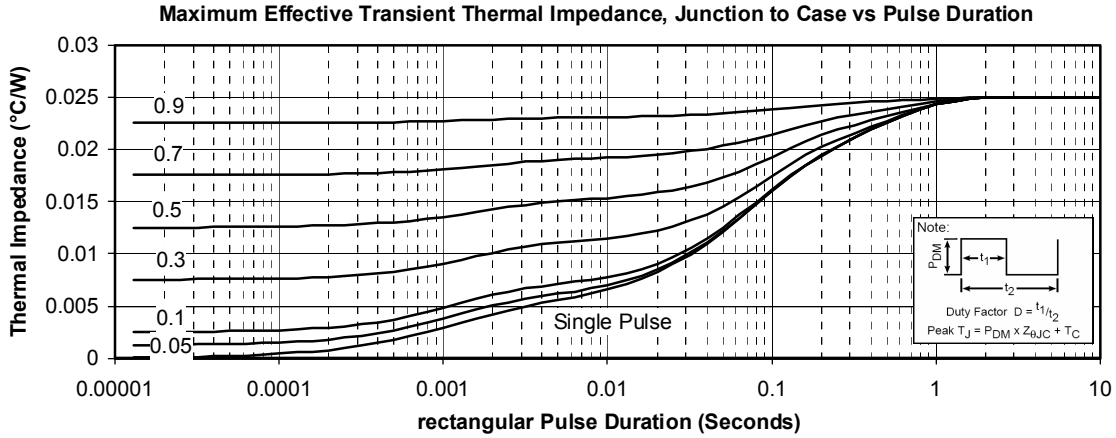
❶ E_{on} includes diode reverse recovery.

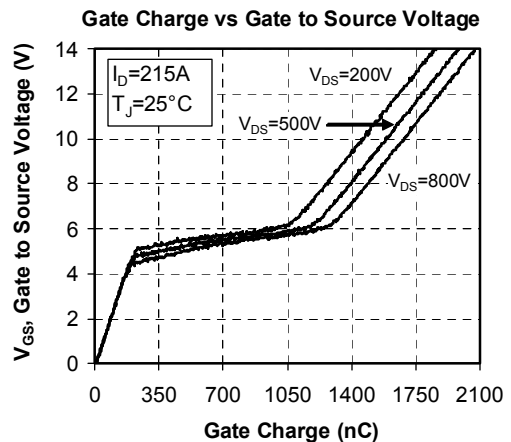
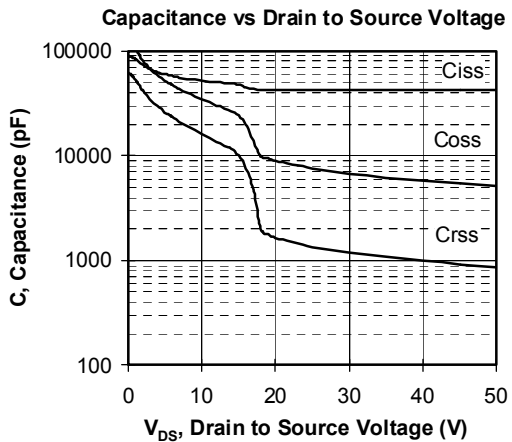
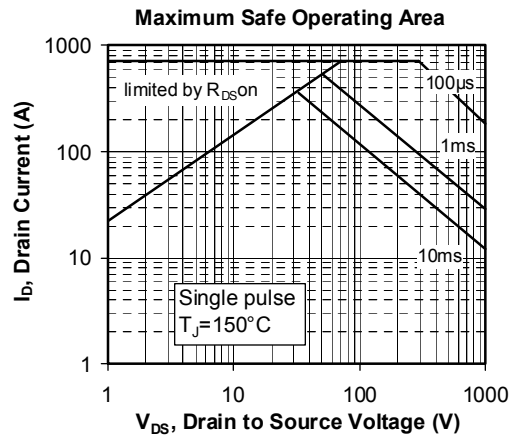
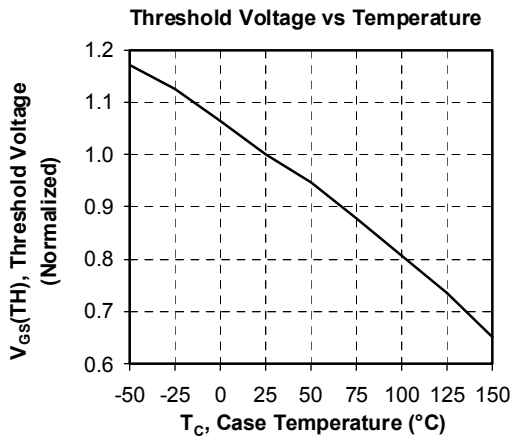
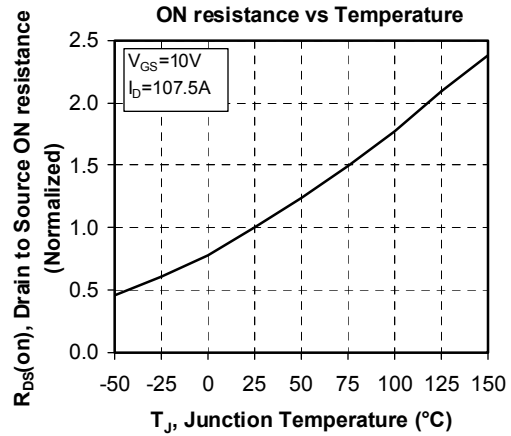
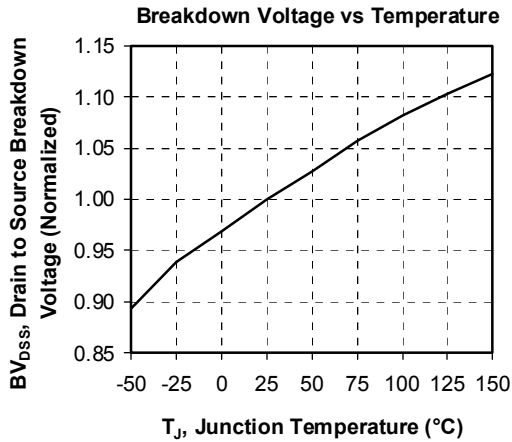
❷ In accordance with JEDEC standard JESD24-1.

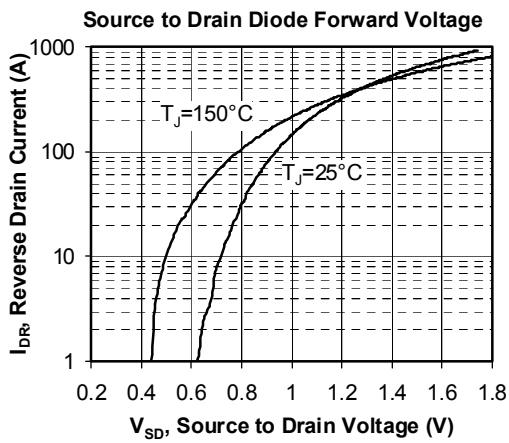
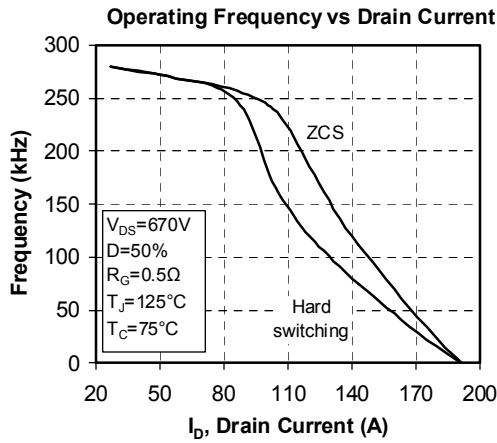
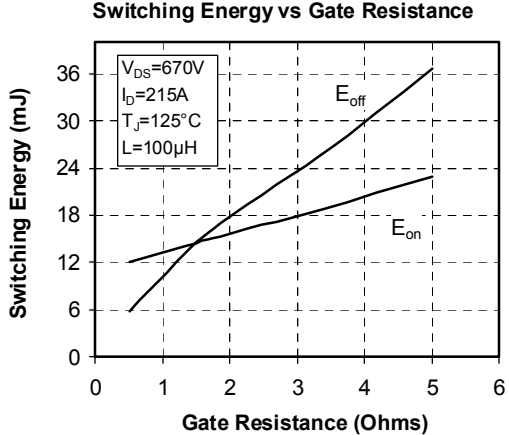
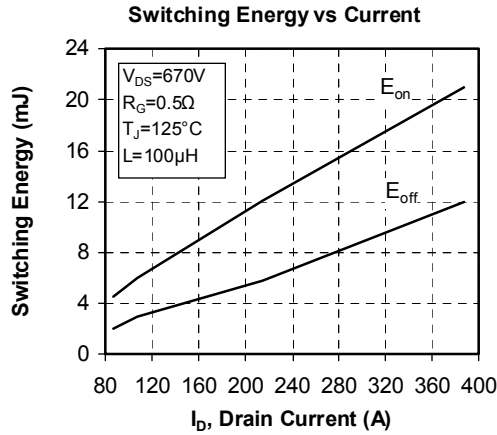
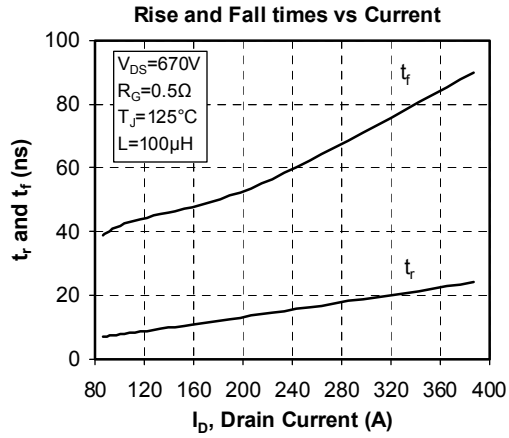
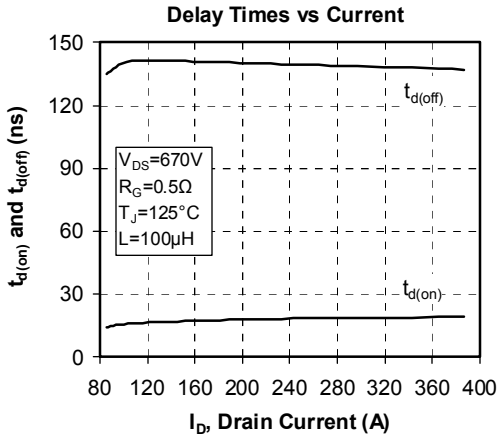
Series diode ratings and characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
V_{RRM}	Maximum Repetitive Reverse Voltage		1000			V
I_{RM}	Maximum Reverse Leakage Current	$V_R = 1000\text{V}$			3	mA
$I_{F(AV)}$	Maximum Average Forward Current	50% duty cycle		360		A
V_F	Diode Forward Voltage	$I_F = 360\text{A}$		1.9	2.5	V
		$I_F = 720\text{A}$		2.2		
		$I_F = 360\text{A}$	$T_j = 125^\circ\text{C}$	1.7		
t_{rr}	Reverse Recovery Time	$I_F = 360\text{A}$ $V_R = 667\text{V}$ $di/dt = 800\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$	280		ns
			$T_j = 125^\circ\text{C}$	350		
Q_{rr}	Reverse Recovery Charge	$I_F = 360\text{A}$ $V_R = 667\text{V}$ $di/dt = 800\text{A}/\mu\text{s}$	$T_j = 25^\circ\text{C}$	4.56		μC
			$T_j = 125^\circ\text{C}$	21.6		

Typical Performance Curve







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