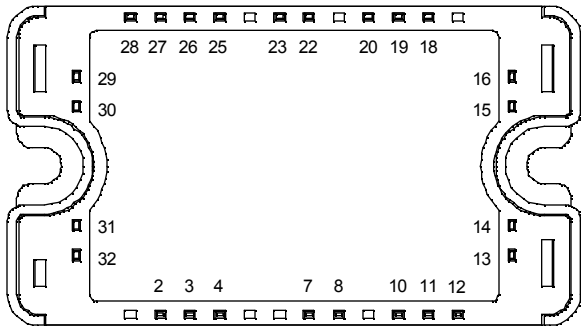
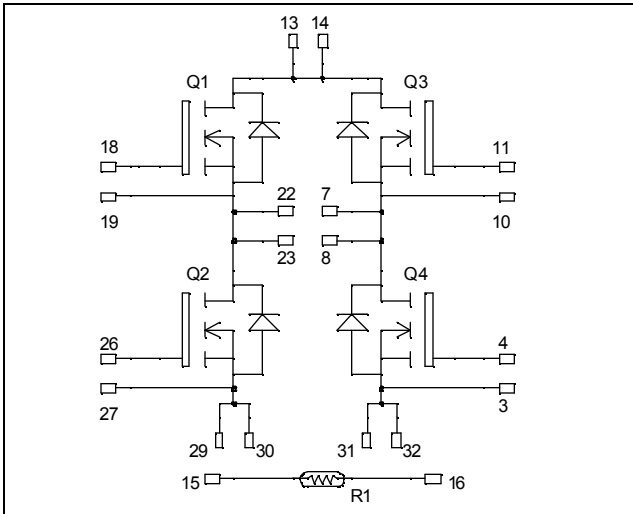


**Full - Bridge
MOSFET Power Module**

**$V_{DSS} = 100V$
 $R_{DSon} = 9m\Omega$ typ @ $T_j = 25^\circ C$
 $I_D = 139A$ @ $T_c = 25^\circ C$**



All multiple inputs and outputs must be shorted together
Example: 13/14 ; 29/30 ; 22/23 ...

Application

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

Features

- Power MOS V[®] FREDFETs
 - Low R_{DSon}
 - Low input and Miller capacitance
 - Low gate charge
 - Fast intrinsic diode
 - Avalanche energy rated
 - Very rugged
- Kelvin source for easy drive
- Very low stray inductance
 - Symmetrical design
- Internal thermistor for temperature monitoring
- High level of integration

Benefits

- Outstanding performance at high frequency operation
- Direct mounting to heatsink (isolated package)
- Low junction to case thermal resistance
- Solderable terminals both for power and signal for easy PCB mounting
- Low profile
- Each leg can be easily paralleled to achieve a phase leg of twice the current capability
- RoHS compliant

Absolute maximum ratings

Symbol	Parameter	Max ratings	Unit
V_{DSS}	Drain - Source Breakdown Voltage	100	V
I_D	Continuous Drain Current	$T_c = 25^\circ C$	139
		$T_c = 80^\circ C$	100 *
I_{DM}	Pulsed Drain current	430	A
V_{GS}	Gate - Source Voltage	± 30	V
R_{DSon}	Drain - Source ON Resistance	9.5	$m\Omega$
P_D	Maximum Power Dissipation	$T_c = 25^\circ C$	390
I_{AR}	Avalanche current (repetitive and non repetitive)	100	A
E_{AR}	Repetitive Avalanche Energy	50	mJ
E_{AS}	Single Pulse Avalanche Energy	3000	

* Specification of MOSFET device but output current must be limited to 75A to not exceed a delta of temperature greater than 30°C for the connectors.

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
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS} = 0V, V_{DS} = 100V$			100	μA
		$T_j = 25^\circ\text{C}$				
$R_{DS(on)}$	Drain – Source on Resistance	$V_{GS} = 0V, V_{DS} = 80V$			500	$\text{m}\Omega$
		$T_j = 125^\circ\text{C}$				
$V_{GS(th)}$	Gate Threshold Voltage	$V_{GS} = V_{DS}, I_D = 2.5\text{mA}$	2		4	V
I_{GSS}	Gate – Source Leakage Current	$V_{GS} = \pm 30V, V_{DS} = 0V$			± 100	nA

Dynamic Characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
C_{iss}	Input Capacitance	$V_{GS} = 0V$		9875		
C_{riss}	Reverse Transfer Capacitance	$f = 1\text{MHz}$		1470		
Q_g	Total gate Charge	$V_{GS} = 10V$ $V_{Bus} = 50V$ $I_D = 139A$		350		nC
Q_{gs}	Gate – Source Charge			60		
Q_{gd}	Gate – Drain Charge			180		
$T_{d(on)}$	Turn-on Delay Time	Inductive switching @ 125°C $V_{GS} = 15V$ $V_{Bus} = 66V$ $I_D = 139A$ $R_G = 5\Omega$		35		ns
T_r	Rise Time			70		
$T_{d(off)}$	Turn-off Delay Time			95		
T_f	Fall Time			125		
E_{on}	Turn-on Switching Energy	Inductive switching @ 25°C $V_{GS} = 15V, V_{Bus} = 66V$ $I_D = 139A, R_G = 5\Omega$		552		μJ
E_{off}	Turn-off Switching Energy			604		
E_{on}	Turn-on Switching Energy	Inductive switching @ 125°C $V_{GS} = 15V, V_{Bus} = 66V$ $I_D = 139A, R_G = 5\Omega$		608		μJ
E_{off}	Turn-off Switching Energy			641		

Source - Drain diode ratings and characteristics

Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit	
I_S	Continuous Source current (Body diode)	$T_c = 25^\circ\text{C}$			139	A	
		$T_c = 80^\circ\text{C}$			100		
V_{SD}	Diode Forward Voltage	$V_{GS} = 0V, I_S = -139A$			1.3	V	
dv/dt	Peak Diode Recovery ①				8	V/ns	
t_{rr}	Reverse Recovery Time	$I_S = -139A$ V_{rr}	$T_j = 25^\circ\text{C}$			190	ns
			$T_j = 125^\circ\text{C}$			370	
			$T_j = 25^\circ\text{C}$		0.4		
Q_{rr}	Reverse Recovery Charge						

Thermal and package characteristics

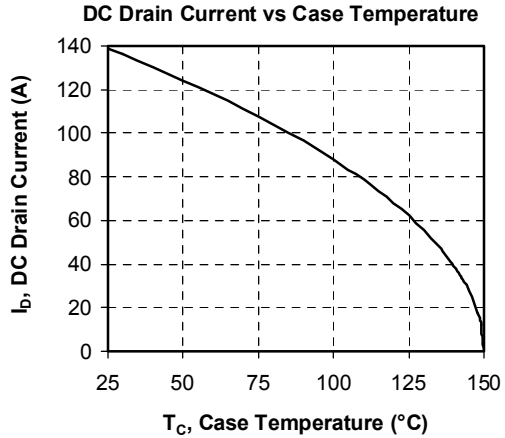
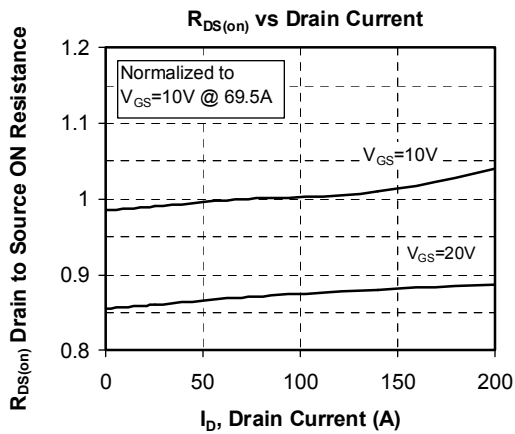
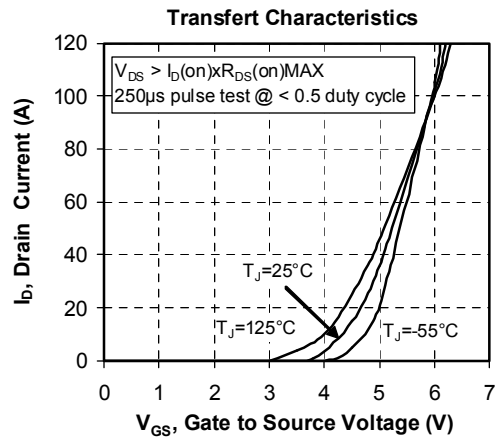
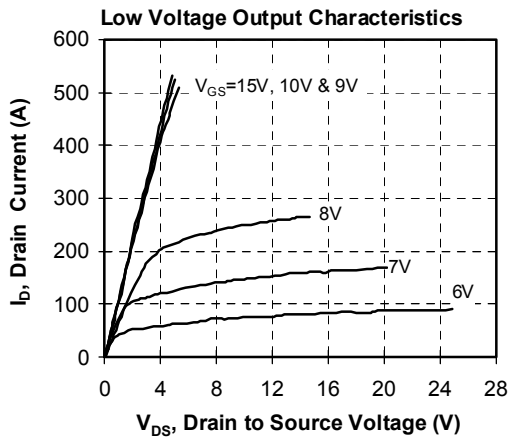
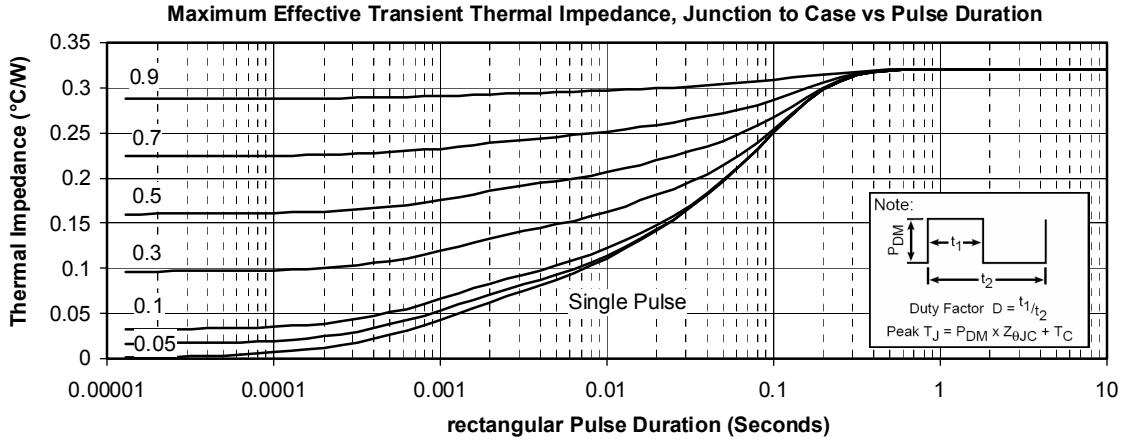
<i>Symbol</i>	<i>Characteristic</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>	
R _{thJC}	Junction to Case Thermal Resistance			0.32	°C/W	
V _{ISOL}	RMS Isolation Voltage, any terminal to case t =1 min, I _{isol} <1mA, 50/60Hz	2500			V	
T _J	Operating junction temperature range	-40		150	°C	
T _{STG}	Storage Temperature Range	-40		125		
T _C	Operating Case Temperature	-40		100		
Torque	Mounting torque	To heatsink	M4	1.5	4.7	N.m
Wt	Package Weight				110	g

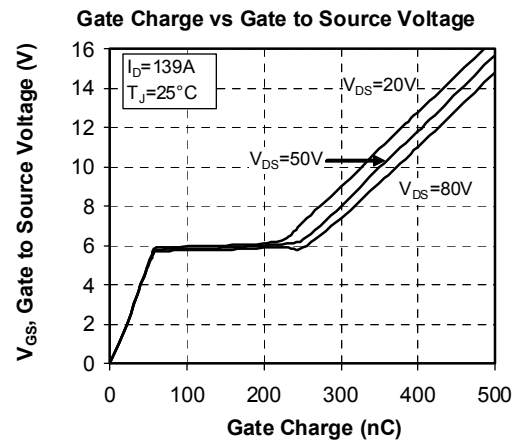
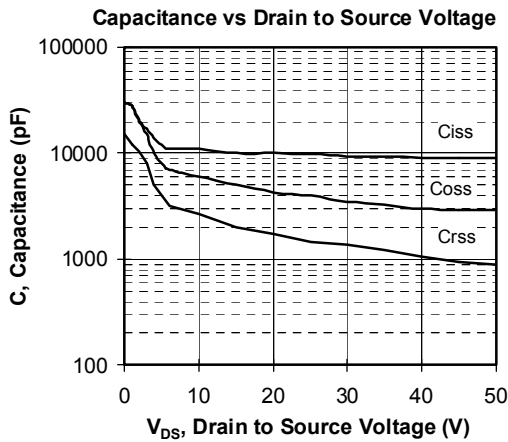
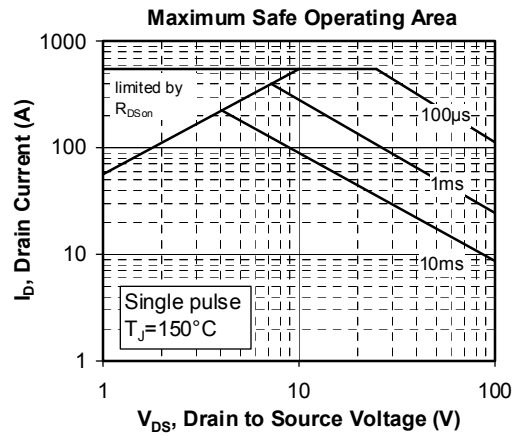
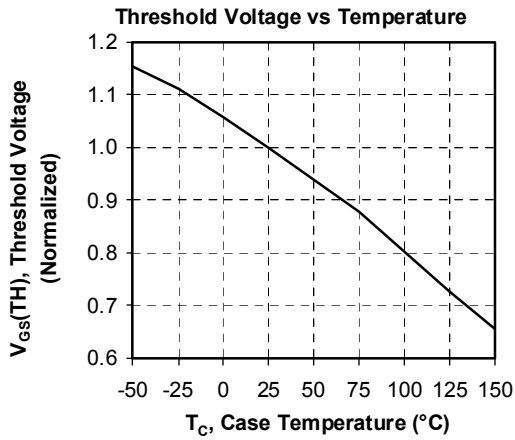
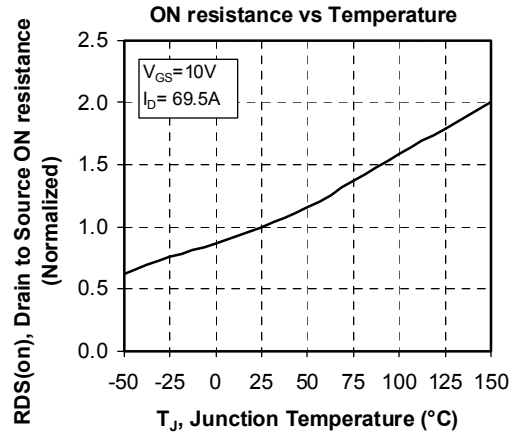
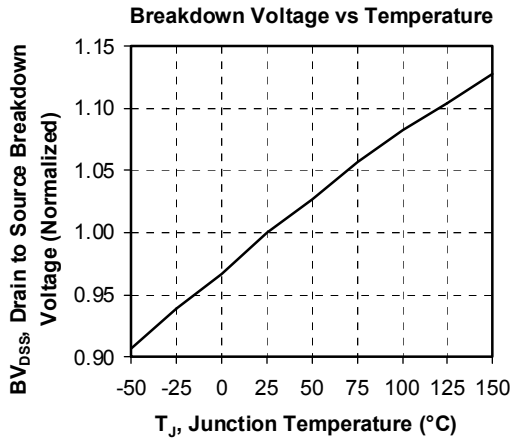
Temperature sensor NTC (for more information see application note APT0406 on www.advancedpower.com).

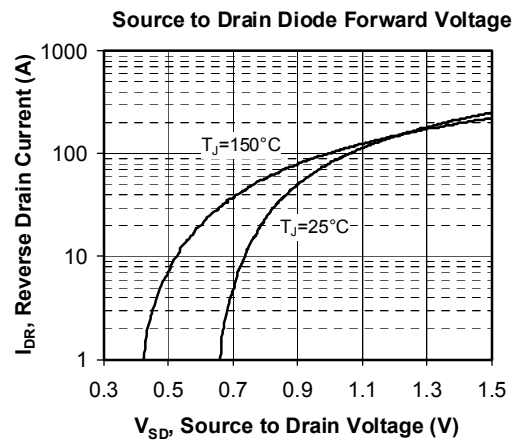
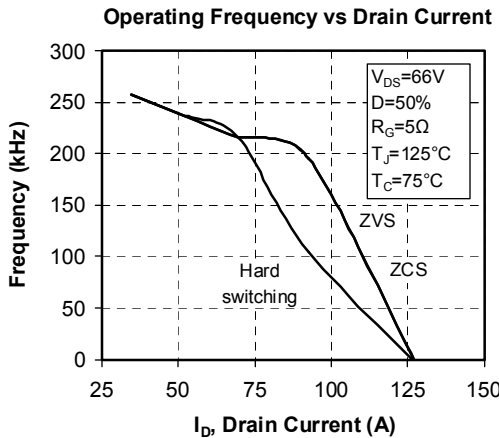
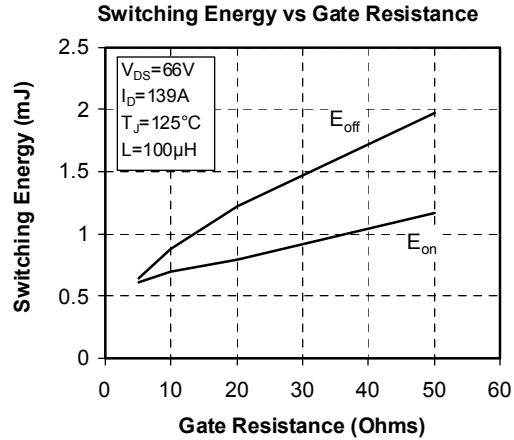
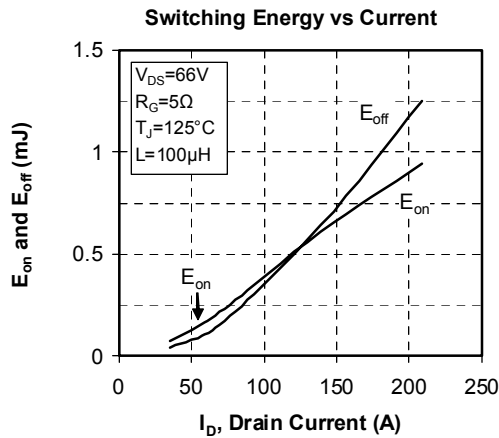
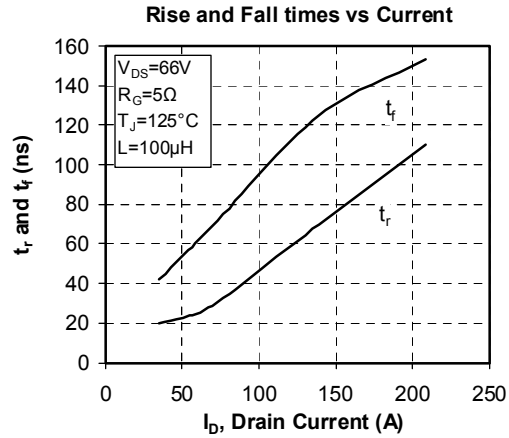
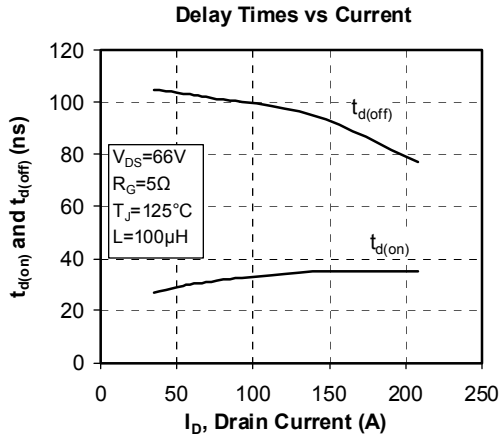
<i>Symbol</i>	<i>Characteristic</i>	<i>Min</i>	<i>Typ</i>	<i>Max</i>	<i>Unit</i>
R ₂₅	Resistance @ 25°C		50		kΩ
B _{25/85}	T ₂₅ = 298.15 K		3952		K

$$R_T = \frac{R_{25}}{\exp \left[B_{25/85} \left(\frac{1}{T_{25}} - \frac{1}{T} \right) \right]}$$

Typical Performance Curve







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