



N-Channel 60-V (D-S) MOSFET

PRODUCT SUMMARY

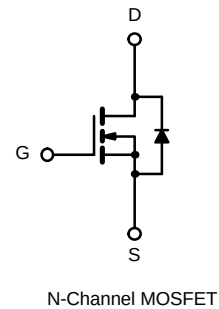
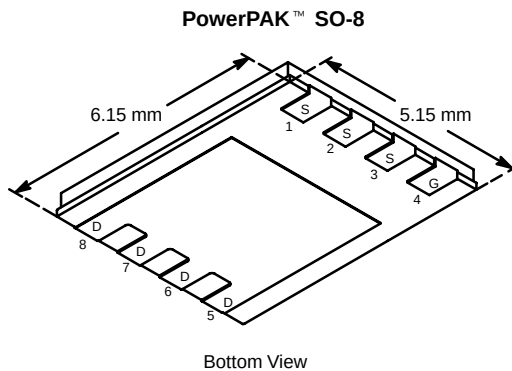
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
60	0.011 @ $V_{GS} = 10$ V	15.8
	0.013 @ $V_{GS} = 6$ V	14.5

FEATURES

- TrenchFET® Power MOSFET
- New Low Thermal Resistance PowerPAK™ Package with Low 1.07-mm Profile
- PWM Optimized for Fast Switching

APPLICATIONS

- Primary Side Switch for 24-V DC/DC Applications
- Secondary Synchronous Rectifier

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

Parameter		Symbol	10 secs	Steady State	Unit
Drain-Source Voltage		V _{DS}	60		V
Gate-Source Voltage		V _{GS}	± 20		
Continuous Drain Current (T _J = 150°C) ^a	T _A = 25 °C	I _D	15.8	9.6	A
	T _A = 70 °C		12.6	7.7	
Continuous Source Current		I _S	4.7	1.7	
Pulsed Drain Current		I _{DM}	50		
Avalanche Current ^b		I _{AS}	50		
Single Avalanche Energy ^b		E _{AS}	125		mJ
Maximum Power Dissipation ^a	T _A = 25 °C	P _D	5.2	1.9	W
	T _A = 70 °C		3.3	1.25	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^a	$t \leq 10$ sec	R_{thJA}	19	24	$^\circ\text{C/W}$
	Steady State		52	65	
Maximum Junction-to-Case (Drain)		R_{thJC}	1.5	1.8	

Notes

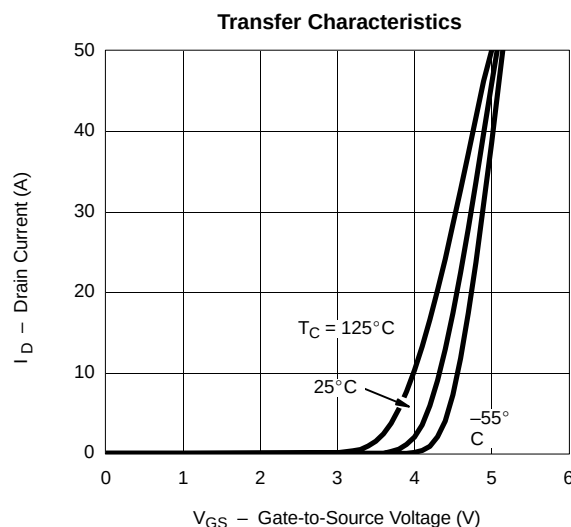
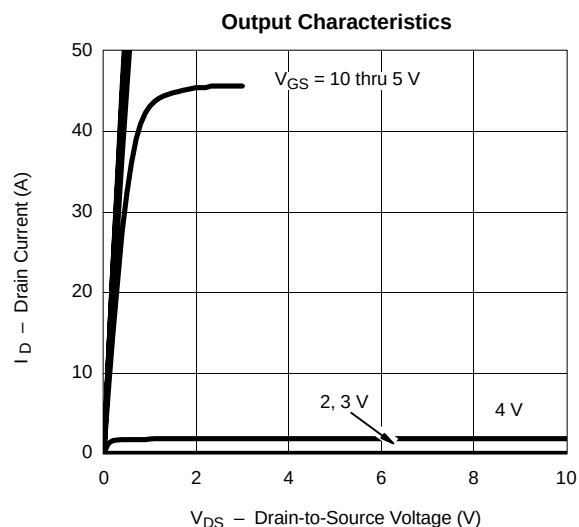
- Surface Mounted on 1" x 1" FR4 Board.
- Guaranteed by design, not subject to production testing.

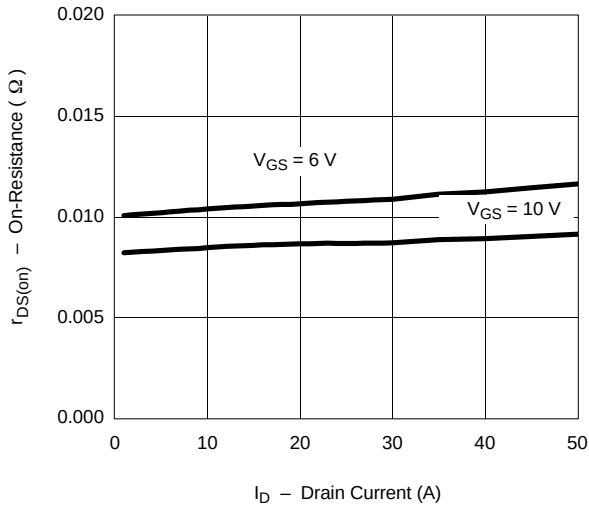
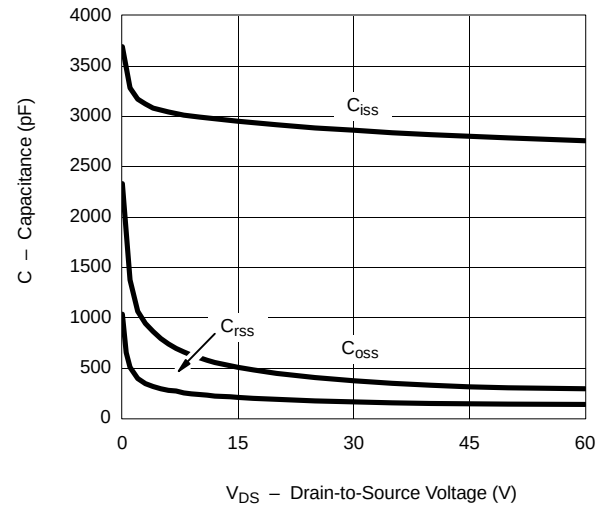
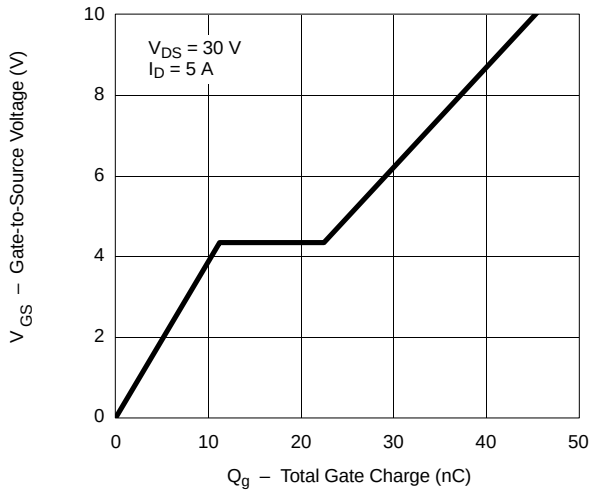
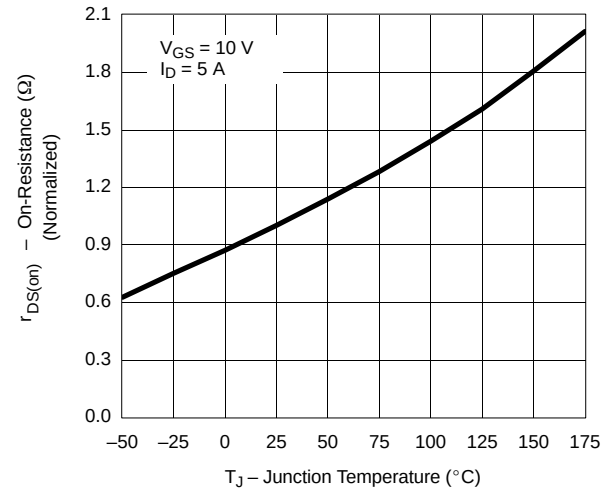
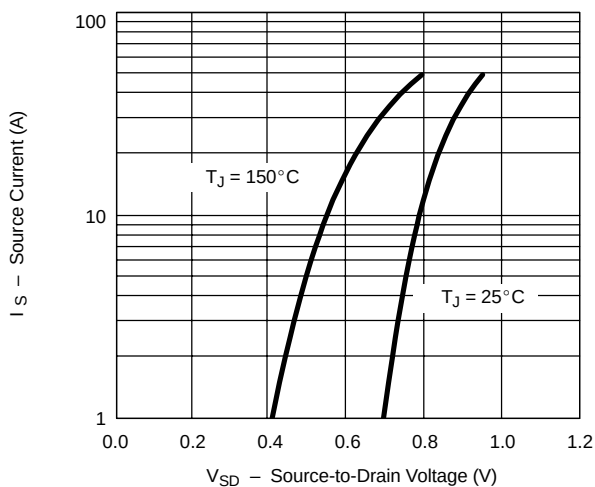
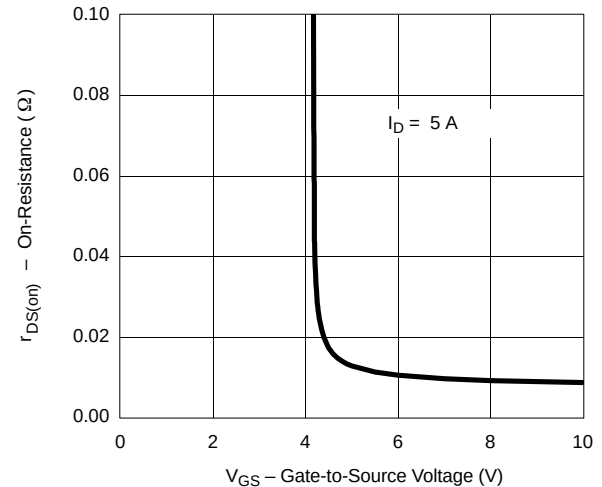
SPECIFICATIONS ($T_J = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)

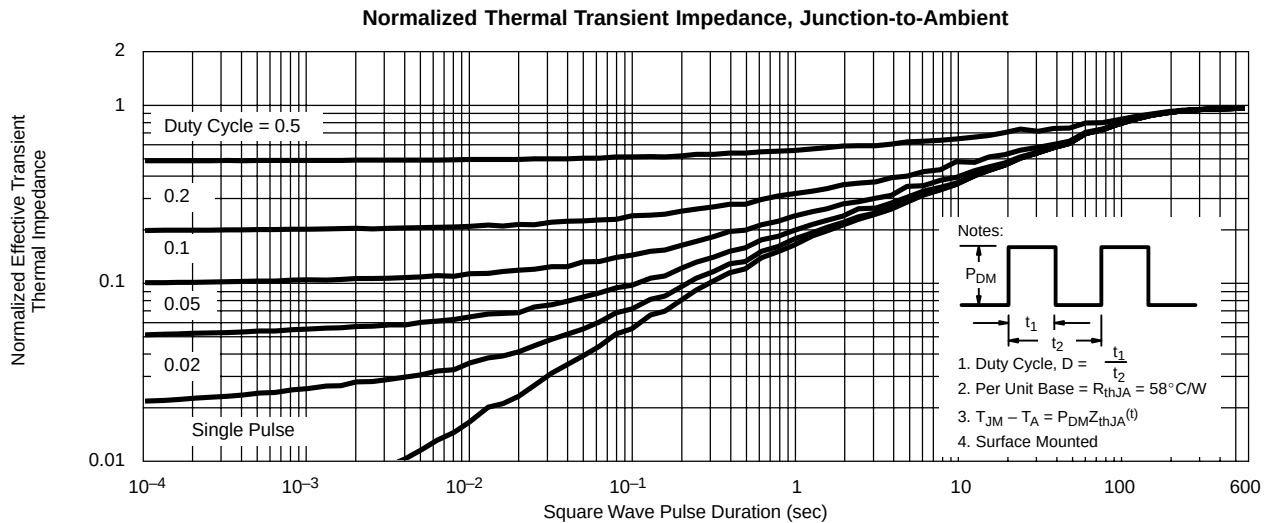
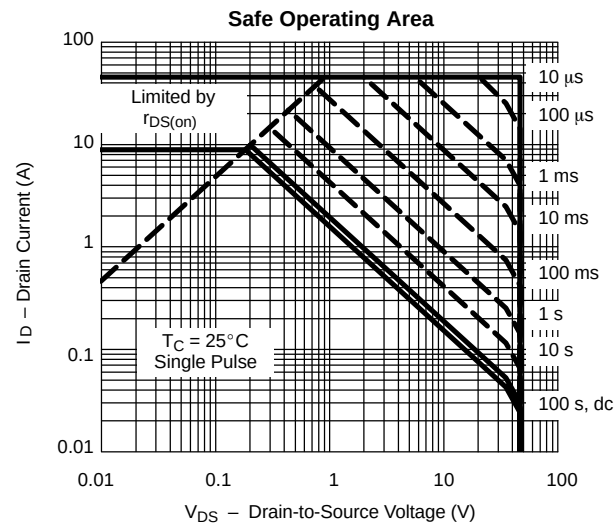
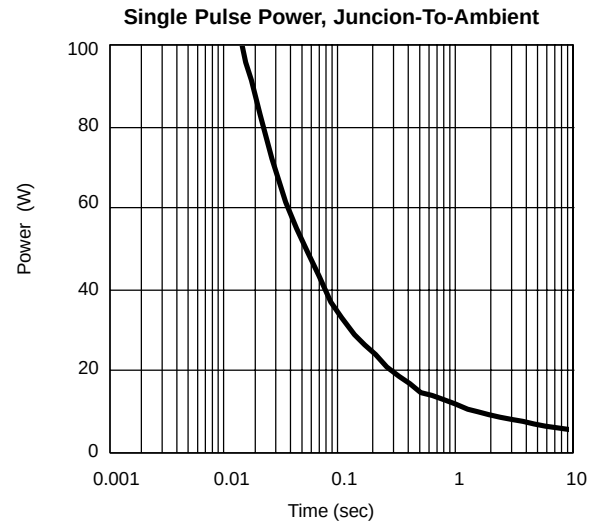
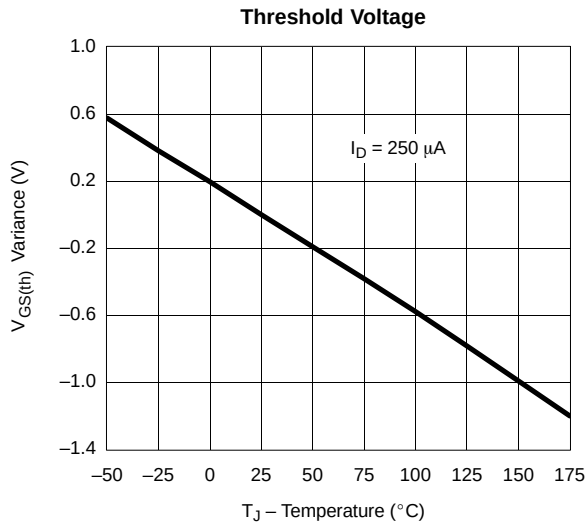
Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, $I_D = 250\ \mu\text{A}$	2.0		4.0	V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0\ \text{V}$, $V_{GS} = \pm 20\ \text{V}$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 48\ \text{V}$, $V_{GS} = 0\ \text{V}$			1	μA
		$V_{DS} = 48\ \text{V}$, $V_{GS} = 0\ \text{V}$, $T_J = 55^\circ\text{C}$			5	
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5\ \text{V}$, $V_{GS} = 10\ \text{V}$	50			A
Drain-Source On-State Resistance ^a	$r_{DS(on)}$	$V_{GS} = 10\ \text{V}$, $I_D = 12\ \text{A}$		0.009	0.011	Ω
		$V_{GS} = 6.0\ \text{V}$, $I_D = 10\ \text{A}$		0.0105	0.013	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15\ \text{V}$, $I_D = 10\ \text{A}$		50		S
Diode Forward Voltage ^a	V_{SD}	$I_S = 3.0\ \text{A}$, $V_{GS} = 0\ \text{V}$		0.75	1.2	V
Dynamic^b						
Total Gate Charge	Q_g	$V_{DS} = 30\ \text{V}$, $V_{GS} = 10\ \text{V}$, $I_D = 12\ \text{A}$		46	57	nC
Gate-Source Charge	Q_{gs}			11.5		
Gate-Drain Charge	Q_{gd}			11.5		
Gate Resistance	R_g			0.85		Ω
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 30\ \text{V}$, $R_L = 30\ \Omega$ $I_D \approx 1.0\ \text{A}$, $V_{GEN} = 10\ \text{V}$, $R_G = 6\ \Omega$		16	25	ns
Rise Time	t_r			12	18	
Turn-Off Delay Time	$t_{d(off)}$			50	75	
Fall Time	t_f			30	45	
Source-Drain Reverse Recovery Time	t_{rr}	$I_F = 3.0\ \text{A}$, $di/dt = 100\ \text{A}/\mu\text{s}$		40	60	

Notes

- a. Pulse test; pulse width $\leq 300\ \mu\text{s}$, duty cycle $\leq 2\%$.
b. Guaranteed by design, not subject to production testing.

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)

**TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)****On-Resistance vs. Drain Current****Capacitance****Gate Charge****On-Resistance vs. Junction Temperature****Source-Drain Diode Forward Voltage****On-Resistance vs. Gate-to-Source Voltage**

TYPICAL CHARACTERISTICS (25°C UNLESS NOTED)




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