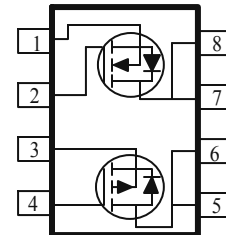


**P & N-Channel 30-V (D-S) MOSFET**

These miniature surface mount MOSFETs utilize a high cell density trench process to provide low  $r_{DS(on)}$  and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

PRODUCT SUMMARY		
V <sub>DS</sub> (V)	r <sub>DS(on)</sub> m(Ω)	I <sub>D</sub> (A)
30	82 @ V <sub>GS</sub> = 2.5V	4.2
	58 @ V <sub>GS</sub> = 4.5V	5.0
-26.5	172 @ V <sub>GS</sub> = -2.5V	-2.9
	112 @ V <sub>GS</sub> = -4.5V	-3.6

- Low  $r_{DS(on)}$  provides higher efficiency and extends battery life
- Low thermal impedance copper leadframe SOIC-8 saves board space
- Fast switching speed
- High performance trench technology



ABSOLUTE MAXIMUM RATINGS (T <sub>A</sub> = 25 °C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	N-Channel	P-Channel	Units
Drain-Source Voltage		V <sub>DS</sub>	30	-26.5	V
Gate-Source Voltage		V <sub>GS</sub>	±12	±12	
Continuous Drain Current <sup>a</sup>	T <sub>A</sub> =25°C	I <sub>D</sub>	5.0	-3.6	A
	T <sub>A</sub> =70°C		4.1	-6.8	
Pulsed Drain Current <sup>b</sup>		I <sub>DM</sub>	20	-20	
Continuous Source Current (Diode Conduction) <sup>a</sup>		I <sub>S</sub>	1.3	-1.3	A
Power Dissipation <sup>a</sup>	T <sub>A</sub> =25°C	P <sub>D</sub>	2.1	2.1	W
	T <sub>A</sub> =70°C		1.3	1.3	
Operating Junction and Storage Temperature Range		T <sub>J</sub> , T <sub>stg</sub>	-55 to 150		°C

THERMAL RESISTANCE RATINGS				
Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient <sup>a</sup>	t ≤ 10 sec	R <sub>θJA</sub>	62.5	°C/W
	Steady-State		110	°C/W

Notes

- a. Surface Mounted on 1" x 1" FR4 Board.
- b. Pulse width limited by maximum junction temperature

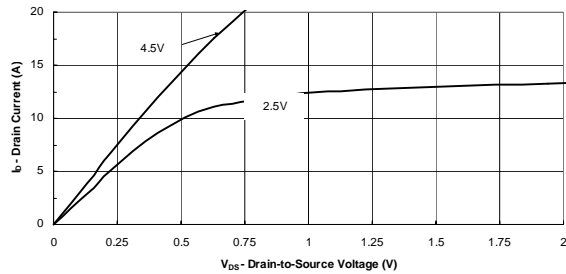
SPECIFICATIONS (T <sub>A</sub> = 25°C UNLESS OTHERWISE NOTED)							
Parameter	Symbol	Test Conditions	Limits				Unit
			Ch	Min	Typ	Max	
<b>Static</b>							
Gate-Threshold Voltage	V <sub>GS(th)</sub>	V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = 250 uA	N	0.6			V
		V <sub>GS</sub> = V <sub>DS</sub> , I <sub>D</sub> = -250 uA	P	-0.6			
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>GS</sub> = -12 V, V <sub>DS</sub> = 0 V	P			±100	nA
		V <sub>GS</sub> = 12 V, V <sub>DS</sub> = 0 V	N			±100	
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = -24 V, V <sub>GS</sub> = 0 V	P			-1	uA
		V <sub>DS</sub> = 24 V, V <sub>GS</sub> = 0 V	N			1	
On-State Drain Current <sup>A</sup>	I <sub>D(on)</sub>	V <sub>DS</sub> = 5 V, V <sub>GS</sub> = 4.5 V	N	20			A
		V <sub>DS</sub> = -5 V, V <sub>GS</sub> = -4.5 V	P	-20			
Drain-Source On-Resistance <sup>A</sup>	r <sub>DS(on)</sub>	V <sub>GS</sub> = 4.5 V, I <sub>D</sub> = 5.0 A	N			58	mΩ
		V <sub>GS</sub> = 2.5 V, I <sub>D</sub> = 4.2 A				82	
		V <sub>GS</sub> = -4.5 V, I <sub>D</sub> = -3.6 A	P			112	
		V <sub>GS</sub> = -2.5 V, I <sub>D</sub> = -2.9 A				172	
Forward Transconductance <sup>A</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 15 V, I <sub>D</sub> = 5.0 A	N		25		S
		V <sub>DS</sub> = -15 V, I <sub>D</sub> = -3.6 A	P		10		
<b>Dynamic</b>							
Total Gate Charge	Q <sub>g</sub>	N-Channel V <sub>DS</sub> =15V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =5.0A P-Channel V <sub>DS</sub> =-15V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-3.6A	N		6.3		nC
			P		10		
Gate-Source Charge	Q <sub>gs</sub>		N		0.9		
			P		2.2		
Gate-Drain Charge	Q <sub>gd</sub>		N		1.9		
			P		1.7		
<b>Switching</b>							
Turn-On Delay Time	t <sub>d(on)</sub>	N-Chaneel V <sub>DD</sub> =15V, V <sub>GS</sub> =4.5V, I <sub>D</sub> =1A , R <sub>GEN</sub> =6Ω, P-Channel V <sub>DD</sub> =-15V, V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-1A R <sub>GEN</sub> =6Ω	N		7.4		nS
			P		7.6		
Rise Time	t <sub>r</sub>		N		4		
			P		6.8		
Turn-Off Delay Time	t <sub>d(off)</sub>		N		22.2		
			P		33.6		
Fall-Time	t <sub>f</sub>		N		3.6		
			P		23.2		

Notes

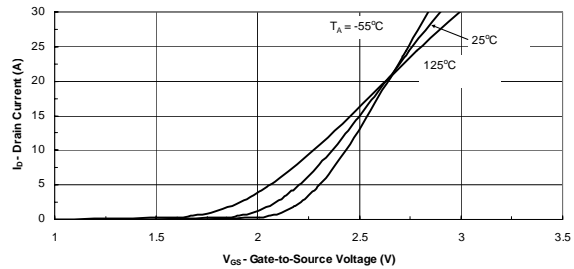
- a. Pulse test: PW ≤ 300us duty cycle ≤ 2%.
- b. Guaranteed by design, not subject to production testing.

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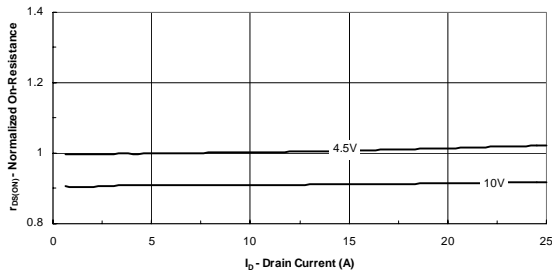
Typical Electrical Characteristics (N-Channel)



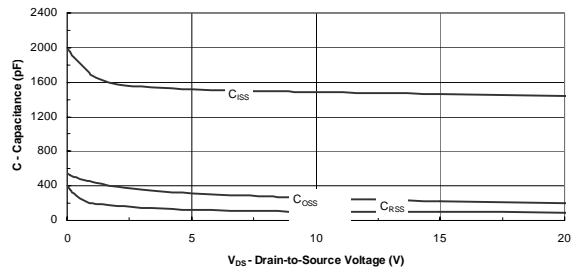
Output Characteristics



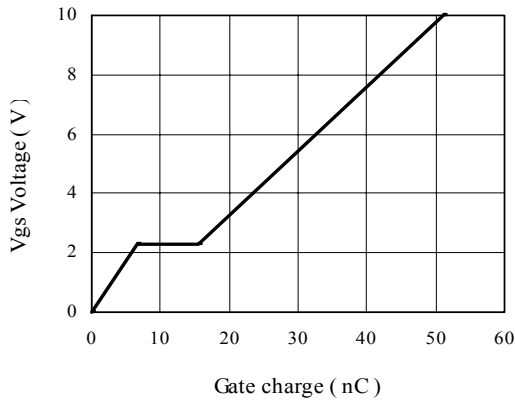
Transfer Characteristics



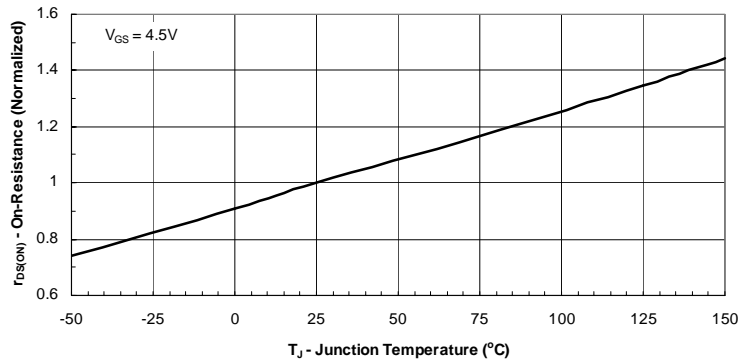
On-Resistance vs. Drain Current



Capacitance

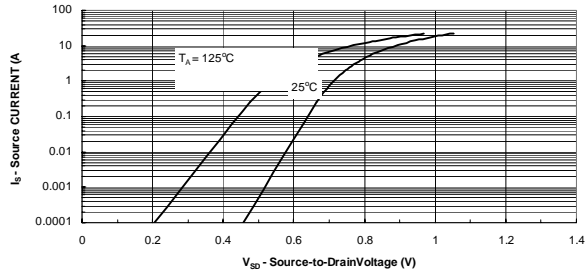


Gate Charge

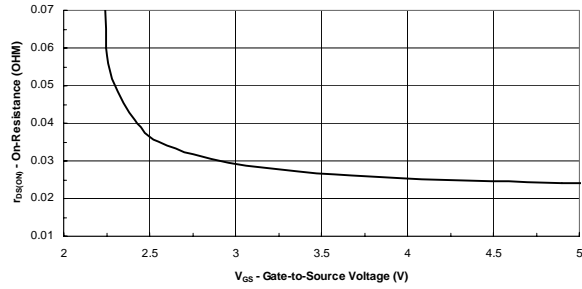


On-Resistance vs. Junction Temperature

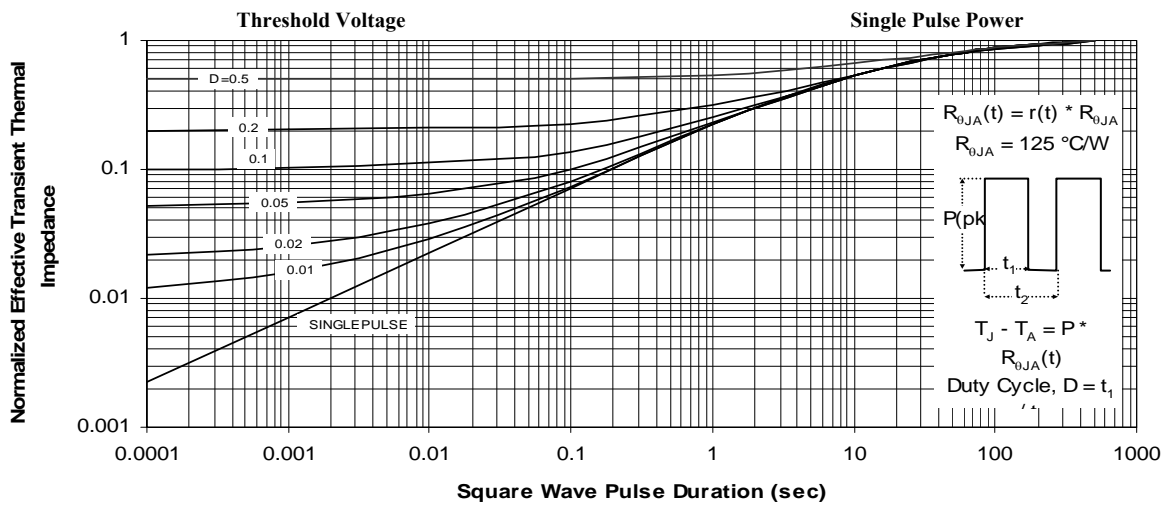
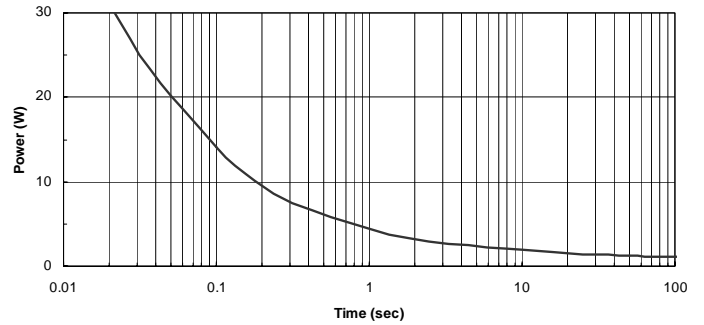
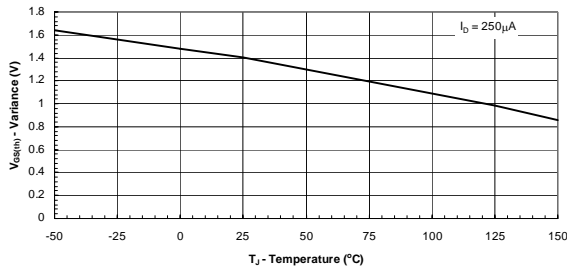
Typical Electrical Characteristics (N-Channel)



Source-Drain Diode Forward Voltage

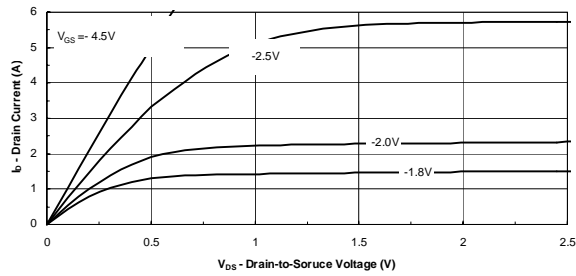


On-Resistance vs. Gate-to-Source Voltage

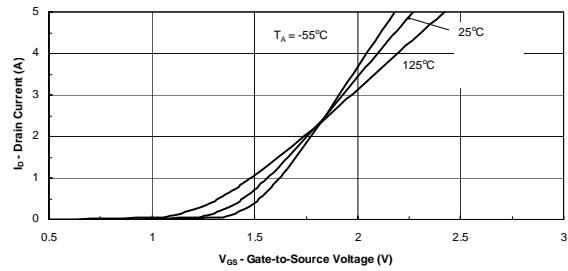


Normalized Thermal Transient Impedance, Junction-to-Ambient

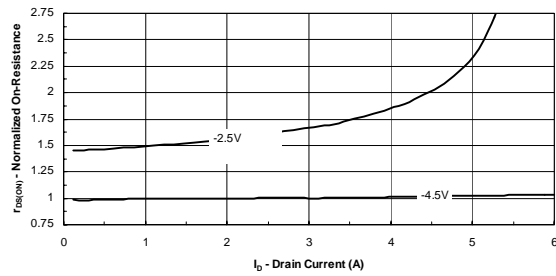
Typical Electrical Characteristics (P-Channel)



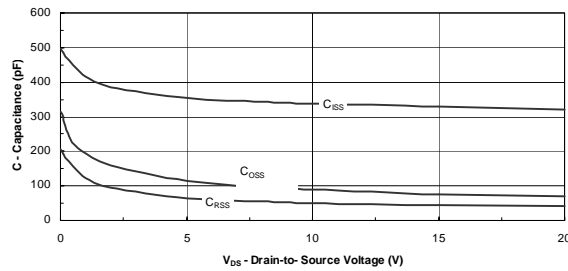
Output Characteristics



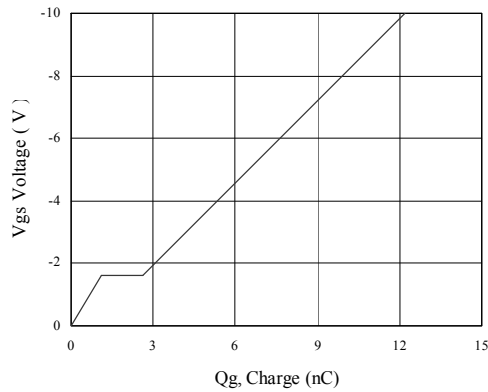
Transfer Characteristics



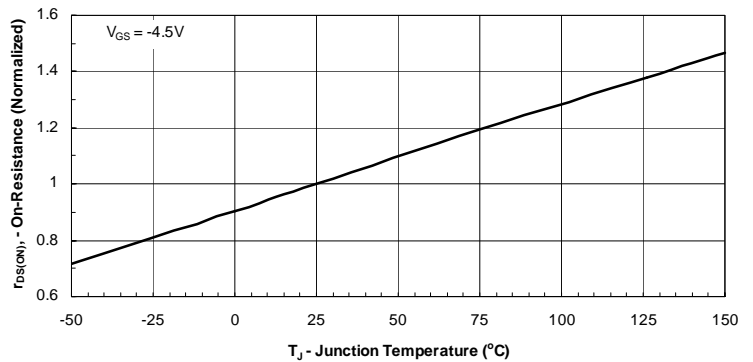
On-Resistance vs. Drain Current



Capacitance

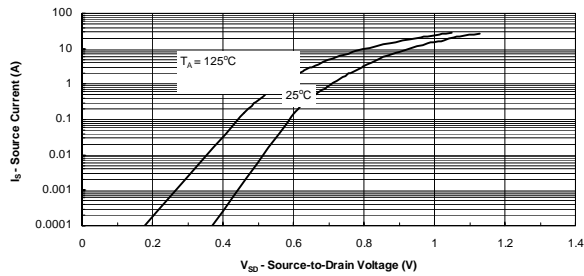


Gate Charge

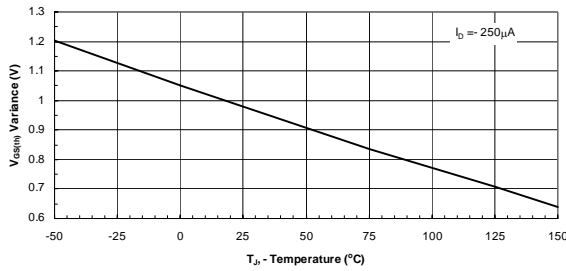


On-Resistance vs. Junction Temperature

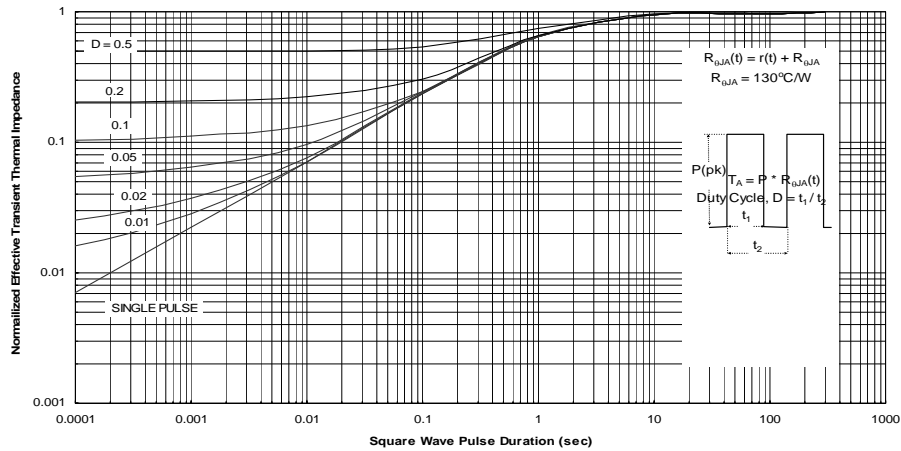
Typical Electrical Characteristics (P-Channel)



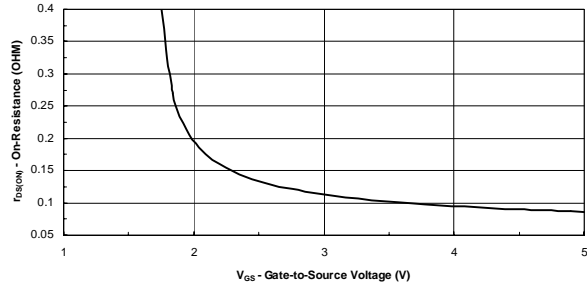
Source-Drain Diode Forward Voltage



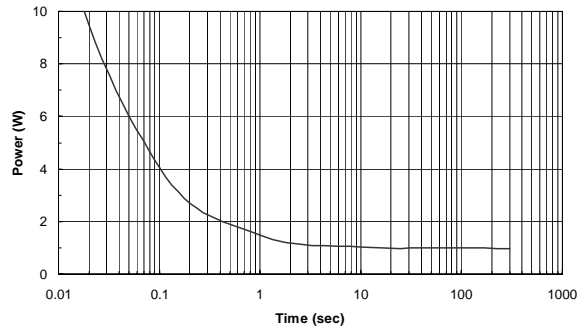
Threshold Voltage



Normalized Thermal Transient Impedance, Junction-to-Ambient

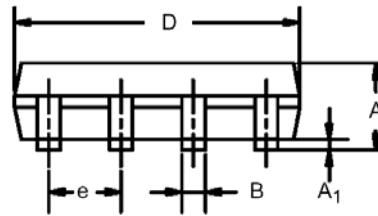
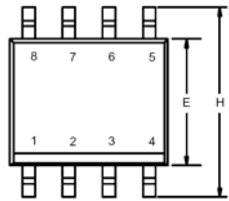


On-Resistance vs. Gate-to Source Voltage



Package Information

SO-8: 8LEAD



Dim	MILLIMETERS		INCHES	
	Min	Max	Min	Max
A	1.35	1.75	0.053	0.069
A <sub>1</sub>	0.10	0.20	0.004	0.008
B	0.35	0.51	0.014	0.020
C	0.19	0.25	0.0075	0.010
D	4.80	5.00	0.189	0.196
E	3.80	4.00	0.150	0.157
e	1.27 BSC		0.050 BSC	
H	5.80	6.20	0.228	0.244
h	0.25	0.50	0.010	0.020
L	0.50	0.93	0.020	0.037
q	0°	8°	0°	8°

