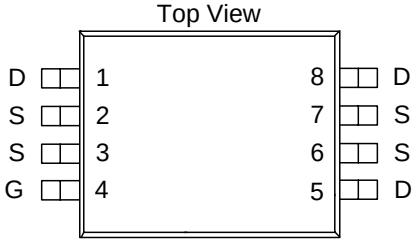
P-Channel 20-V (D-S) MOSFET

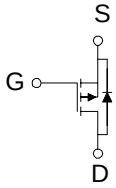
These miniature surface mount MOSFETs utilize a high cell density trench process to provide low $r_{DS(on)}$ and to ensure minimal power loss and heat dissipation. Typical applications are DC-DC converters and power management in portable and battery-powered products such as computers, printers, PCMCIA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

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

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ m(Ω)	I_D (A)
-20	13 @ V_{GS} = -4.5V	-9.5
	19 @ V_{GS} = -2.5V	-7.9
	35 @ V_{GS} = -1.8V	-5.8

TSSOP-8
Top View





P-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C UNLESS OTHERWISE NOTED)				
Parameter		**Symbol**	**Maximum**	**Units**
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	±12	
Continuous Drain Current[a]	T_A=25°C	I_D	-9.5	A
	T_A=70°C		-7.7	
Pulsed Drain Current[b]		I_{DM}	-30	
Continuous Source Current (Diode Conduction)[a]		I_S	-1.5	A
Power Dissipation[a]	T_A=25°C	P_D	1.8	W
	T_A=70°C		1.2	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS				
Parameter		**Symbol**	**Maximum**	**Units**
Maximum Junction-to-Ambient[a]	t <= 10 sec	$R_{\theta JA}$	70	°C/W
	Steady State		115	

Notes

a. Surface Mounted on 1" x 1" FR4 Board.

b. Pulse width limited by maximum junction temperature

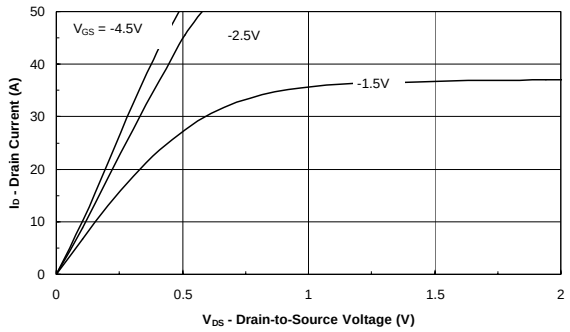
SPECIFICATIONS (T_A = 25°C UNLESS OTHERWISE NOTED)						
Parameter	**Symbol**	**Test Conditions**	**Limits**			**Unit**
			Min	**Typ**	**Max**	
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250 uA	-0.7			
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±12 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -16 V, V_{GS} = 0 V			-1	uA
		V_{DS} = -16 V, V_{GS} = 0 V, T_J = 55°C			-10	
On-State Drain Current[A]	$I_{D(on)}$	V_{DS} = -5 V, V_{GS} = -4.5 V	-20			A
Drain-Source On-Resistance[A]	$r_{DS(on)}$	V_{GS} = -4.5 V, I_D = -9.5 A			13	mΩ
		V_{GS} = -2.5 V, I_D = -7.9 A			19	
		V_{GS} = -1.8 V, I_D = -5.8 A			35	
Forward Tranconductance[A]	g_{fs}	V_{DS} = -15 V, I_D = -9.5 A		45		S
Diode Forward Voltage	V_{SD}	I_S = 1.5 A, V_{GS} = 0 V		-0.6		V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = -10 V, V_{GS} = -4.5 V, I_D = -9.5 A		55.0		nC
Gate-Source Charge	Q_{gs}			7.2		
Gate-Drain Charge	Q_{gd}			12.0		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -10 V, R_L = 6 Ω , ID = -1 A, VGEN = -4.5 V		45		nS
Rise Time	t_r			75		
Turn-Off Delay Time	$t_{d(off)}$			240		
Fall-Time	t_f			110		

Notes

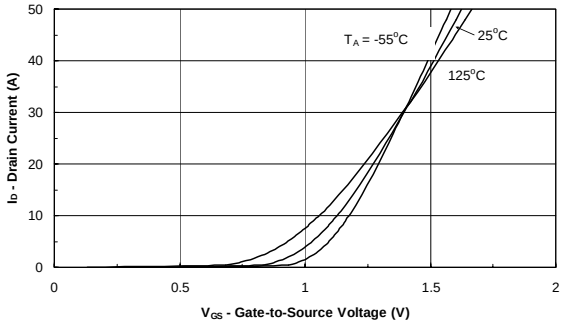
a. Pulse test: PW <= 300us duty cycle <= 2%.

b. Guaranteed by design, not subject to production testing.

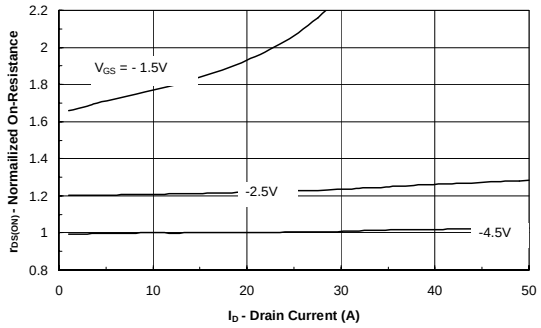
Typical Electrical Characteristics



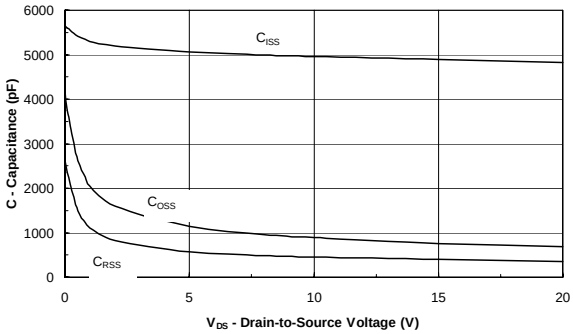
Output Characteristics



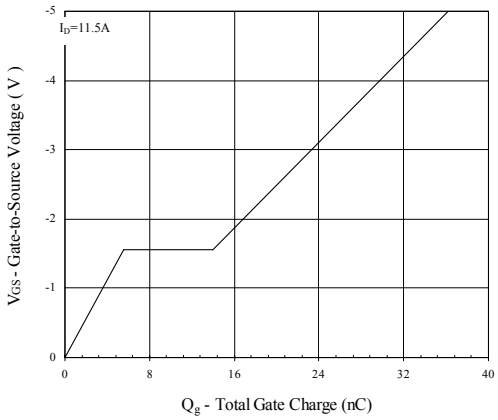
Transfer Characteristics



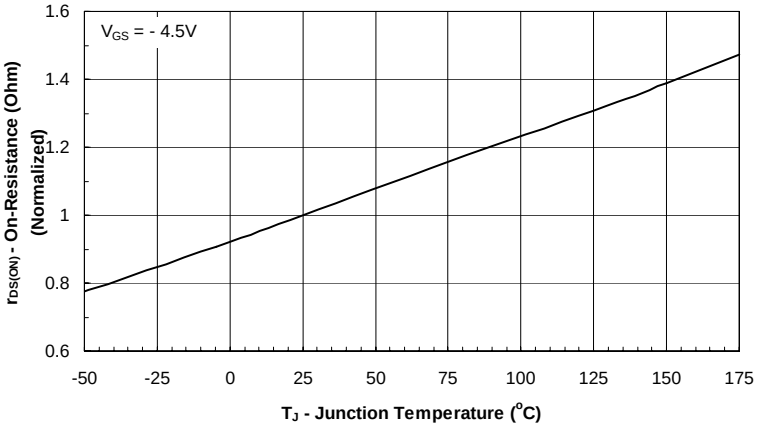
On-Resistance vs. Drain Current



Capacitance

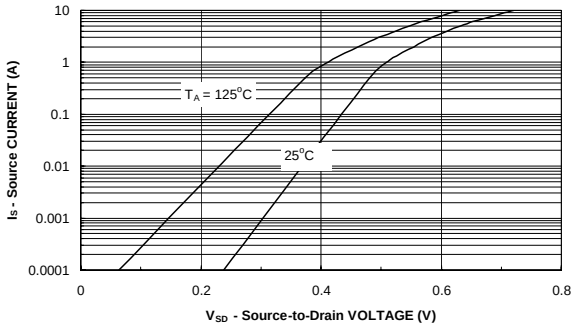


Gate Charge

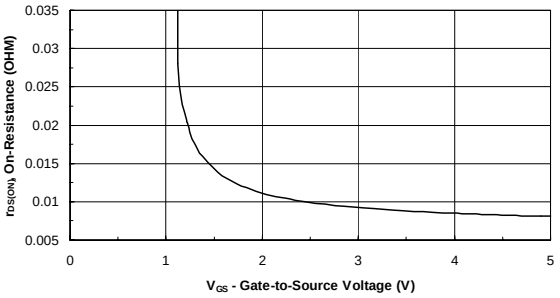


On-Resistance vs. Junction Temperature

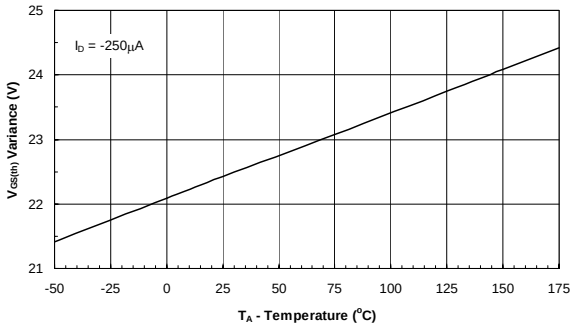
Typical Electrical Characteristics



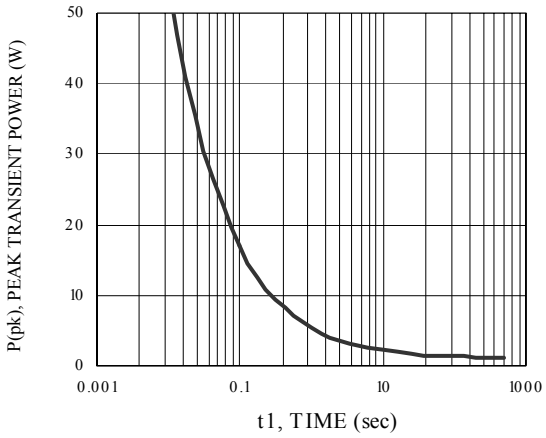
Source-Drain Diode Forward Voltage



On-Resistance vs. Gate-to-Source Voltage

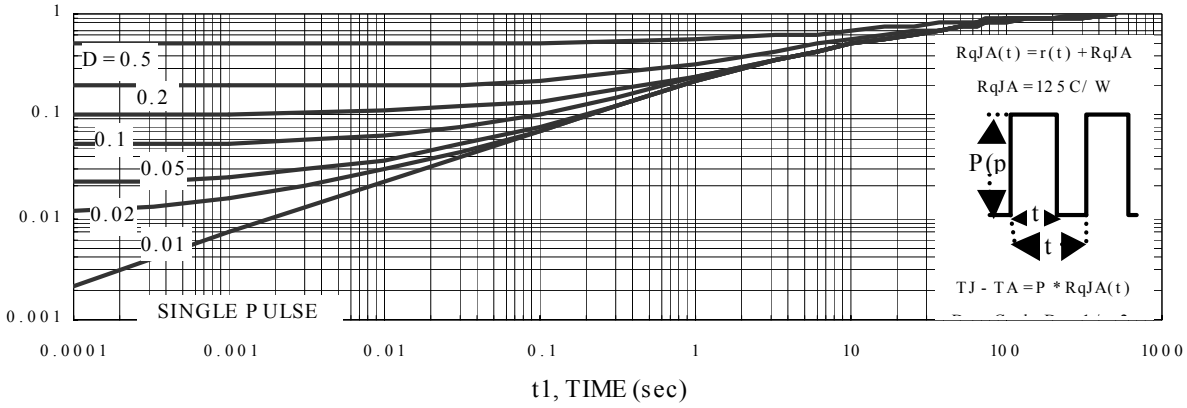


Threshold Voltage



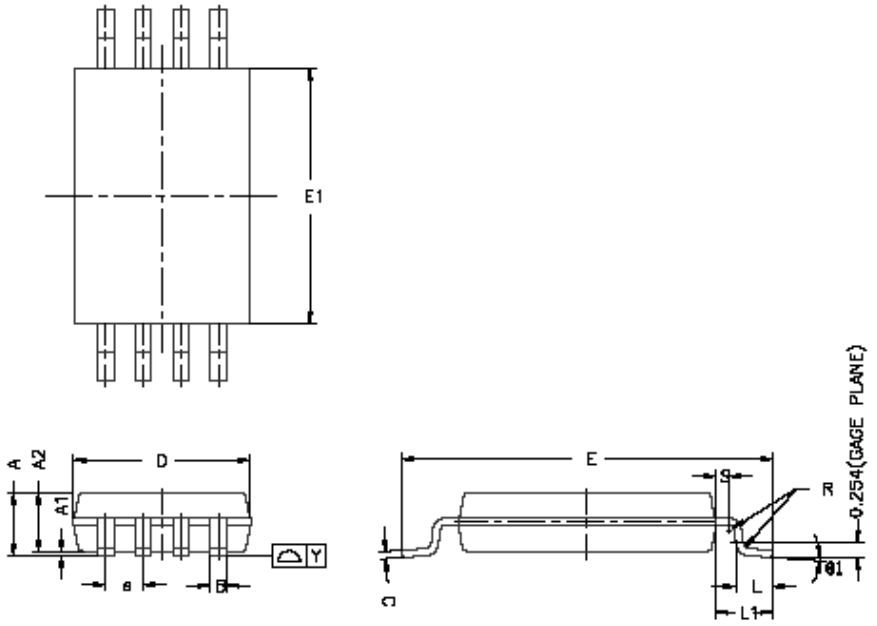
Single Pulse Power, Junction-to-Ambient

Normalized Thermal Transient Impedance, Junction-to-Ambient



Package Information

TSSOP-8: 8LEAD



DIM.	MILLIMETERS		
	MIN.	NDM.	MAX.
A	1.05	1.10	1.20
A(1)	0.05	0.10	0.15
A(2)	0.99	1.02	1.05
B	0.19	0.25	0.30
C	--	0.127	--
D	2.90	3.00	3.10
E	6.20	6.40	6.60
E1	4.30	4.40	4.50
e	0.65BSC		
L	0.45	0.60	0.75
L1	0.90	1.00	1.10
Y	--	--	0.10
θ1	0°	4°	8°
R	0.09	--	--
S	0.20	--	--