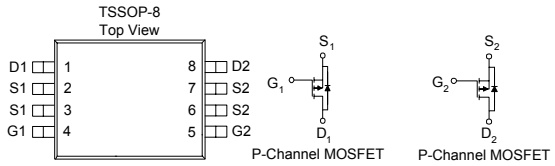
Dual P-Channel 12-V (D-S) MOSFET

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)	$r_{DS(on)}$ (OHM)	I_D (A)
-12	0.022 @ V_{GS} = -4.5V	-5.7
	0.027 @ V_{GS} = -2.5V	-4.9
	0.032 @ V_{GS} = -1.8V	-4.0



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	-12	V
Gate-Source Voltage		V_{GS}	±8	
Continuous Drain Current[a]	T_A=25°C	I_D	-5.7	A
	T_A=70°C		-4.7	
Pulsed Drain Current[b]		I_{DM}	-10	
Continuous Source Current (Diode Conduction)[a]		I_S	±1.6	A
Power Dissipation[a]	T_A=25°C	P_D	1.15	W
	T_A=70°C		0.7	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typ	Max	
Maximum Junction-to-Ambient[a]	t <= 10 sec	R_{thJA}	93	110	°C/W
	Steady State		130	150	

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	-0.4			V
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = +/-8 V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -9.6 V, V_{GS} = 0 V			-1	uA
		V_{DS} = -9.6 V, V_{GS} = 0 V, T_J = 55°C			-10	
On-State Drain Current[A]	$I_{D(on)}$	V_{DS} = -5 V, V_{GS} = -10 V	-3			A
Drain-Source On-Resistance[A]	$r_{DS(on)}$	V_{GS} = -4.5 V, I_D = -4.0 A			0.022	Ω
		V_{GS} = -2.5 V, I_D = -3.6 A			0.027	
		V_{GS} = -1.8 V, I_D = -3.2 A			0.032	
Forward Tranconductance[A]	g_{fs}	V_{DS} = -5 V, I_D = -4.0 A		3		S
Diode Forward Voltage	V_{SD}	I_S = -1.6 A, V_{GS} = 0 V		-0.7		V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = -5 V, V_{GS} = -4.5 V, I_D = -4.0 A		19		nC
Gate-Source Charge	Q_{gs}			4.5		
Gate-Drain Charge	Q_{gd}			5.3		
Input Capacitance	C_{iss}	P-Channel VDS=-6V, VGS=0V, f=1MHz		1800		pF
Output Capacitance	C_{oss}			400		
Reverse Transfer Capacitance	C_{rss}			300		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -5 V, R_L = 5 OHM, V_{GEN} = -4.5 V, R_G = 6 OHM		240		ns
Rise Time	t_r			580		
Turn-Off Delay Time	$t_{d(off)}$			7		
Fall-Time	t_f			4.2		

Notes

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

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

Typical Electrical Characteristics

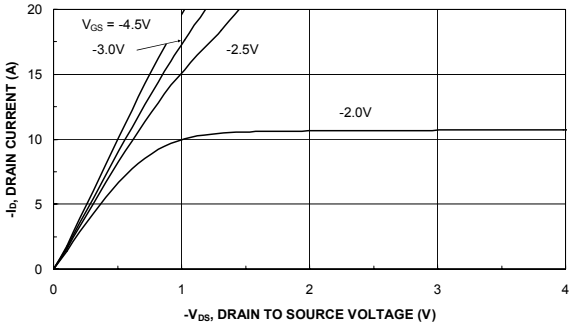


Figure 1. Output Characteristics

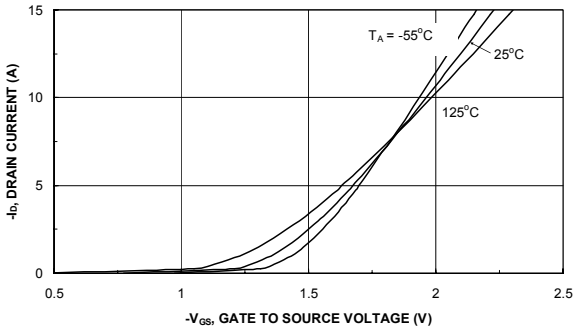


Figure 2. Transfer Characteristics

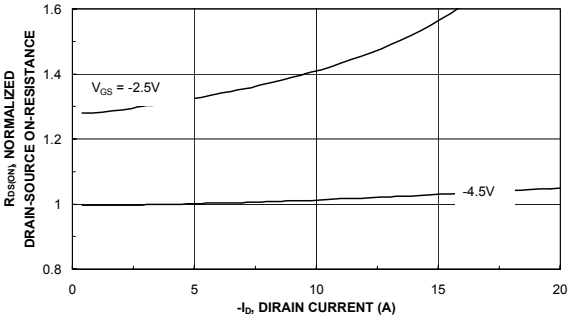


Figure 3. On-Resistance vs. Drain Current

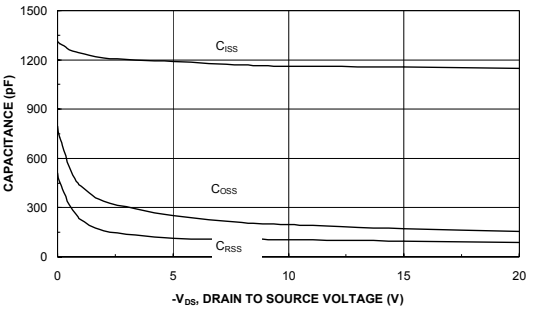


Figure 4. Capacitance

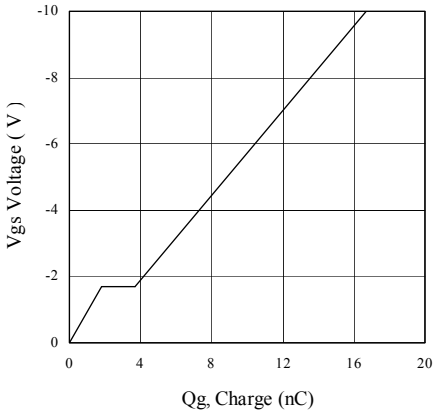


Figure 5. Gate Charge

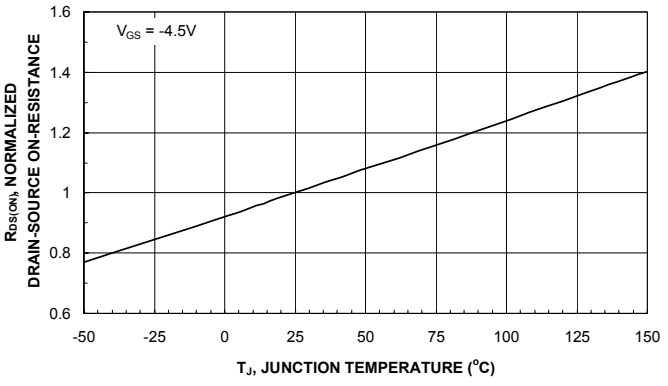


Figure 6. On-Resistance vs. Junction Temperature

Typical Electrical Characteristics

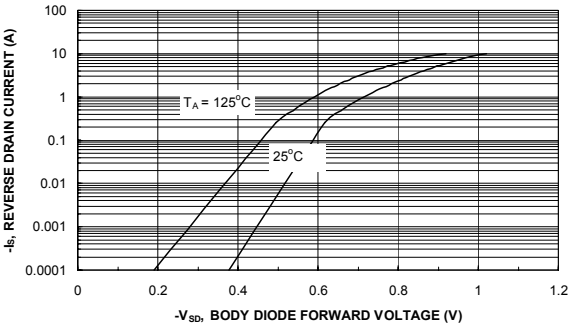


Figure 7. Source-Drain Diode Forward Voltage

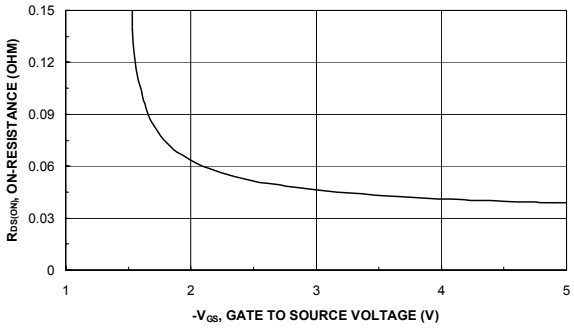


Figure 8. On-Resistance with Gate to Source Voltage

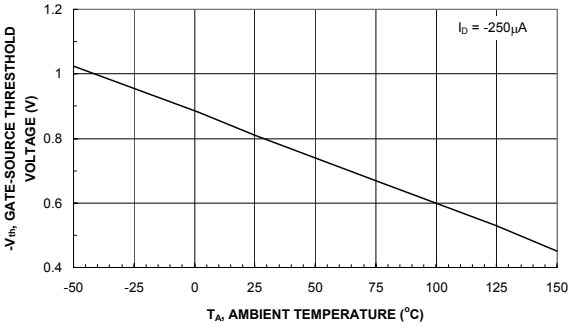


Figure 9. Vth Gate to Source Voltage Vs Temperature

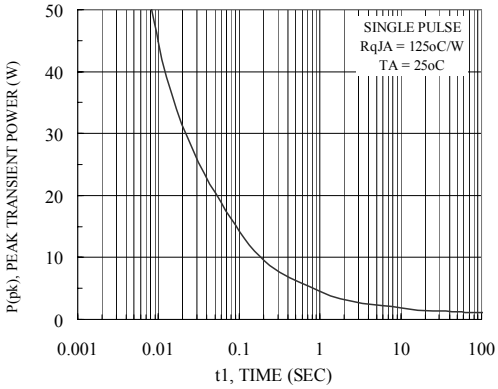


Figure 10. Single Pulse Maximum Power Dissipation

Normalized Thermal Transient Junction to Ambient

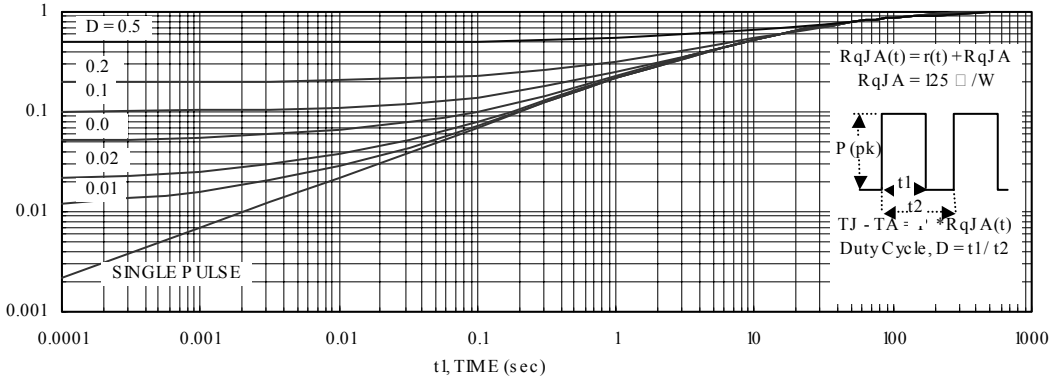
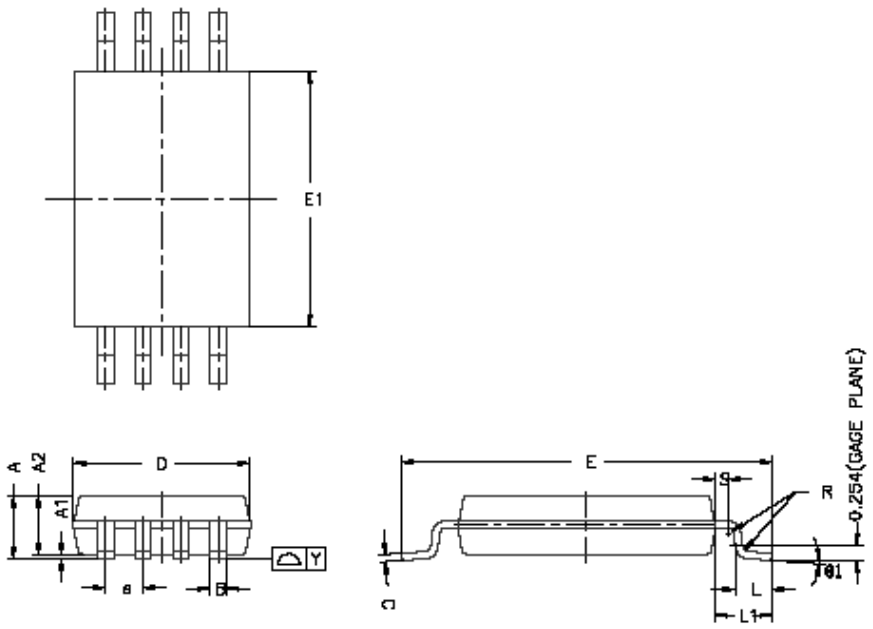


Figure 11. Transient Thermal Response Curve

Package Information

TSSOP-8: 8LEAD



DIM.	MILLIMETERS		
	MIN.	NOM.	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	--	--