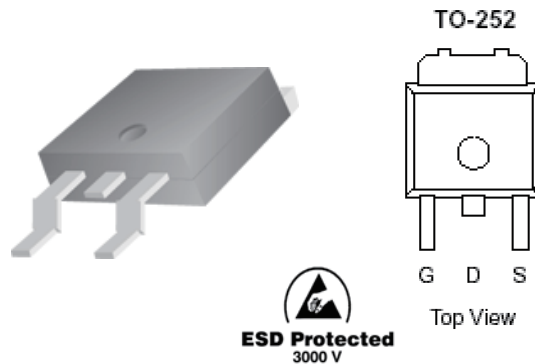


P-Channel 40-V (D-S) MOSFET

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 DPAK saves board space
- Fast switching speed
- High performance trench technology



PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ m(Ω)	I_D (A)
-40	30 @ $V_{GS} = -10V$	36
	40 @ $V_{GS} = -4.5V$	29

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ UNLESS OTHERWISE NOTED)				
Parameter		Symbol	Maximum	Units
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	± 20	
Continuous Drain Current ^a	$T_A = 25^\circ\text{C}$	I_D	36	A
Pulsed Drain Current ^b		I_{DM}	± 40	
Continuous Source Current (Diode Conduction) ^a		I_S	-30	A
Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	50	W
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 175	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS			
Parameter	Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Maximum Junction-to-Case	$R_{\theta JC}$	3.0	$^\circ\text{C/W}$

Notes

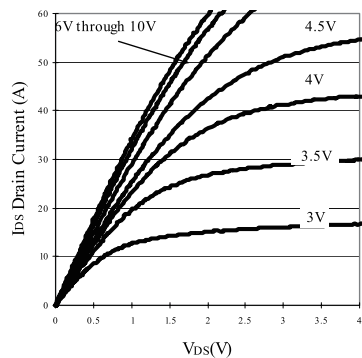
- Surface Mounted on 1" x 1" FR4 Board.
- Pulse width limited by maximum junction temperature

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	-1			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ±25 V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -24 V, V _{GS} = 0 V			-1	uA
		V _{DS} = -24 V, V _{GS} = 0 V, T _J = 55°C			-5	
On-State Drain Current ^A	I _{D(on)}	V _{DS} = -5 V, V _{GS} = -10 V	-41			A
Drain-Source On-Resistance ^A	r _{DS(on)}	V _{GS} = -10 V, I _D = -36 A			30	mΩ
		V _{GS} = -4.5 V, I _D = -29 A			40	
Forward Tranconductance ^A	g _{fs}	V _{DS} = -15 V, I _D = -36 A		31		S
Diode Forward Voltage	V _{SD}	I _S = -41 A, V _{GS} = 0 V		-0.7		V
Dynamic ^b						
Total Gate Charge	Q _g	V _{DS} = -15 V, V _{GS} = -4.5 V, I _D = -36 A		13.9	30	nC
Gate-Source Charge	Q _{gs}			5.2	20	
Gate-Drain Charge	Q _{gd}			5.8	20	
Input Capacitance	C _{iss}	V _{DS} = -15 V, V _{GS} = 0 V, f = 1MHz		1583	4000	pF
Output Capacitance	C _{oss}			278	600	
Reverse Transfer Capacitance	C _{rss}			183	400	
Switching						
Turn-On Delay Time	t _{d(on)}	V _{DD} = -15 V, R _L = 15 Ω , ID = -41 A, VGEN = -10 V, RG = 6Ω		15		nS
Rise Time	t _r			12		
Turn-Off Delay Time	t _{d(off)}			62		
Fall-Time	t _f			46		

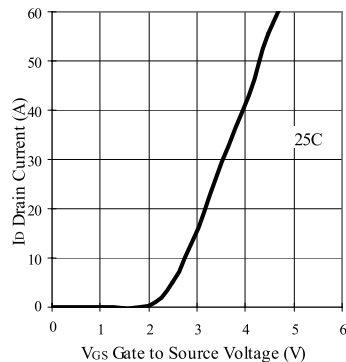
Notes

- Pulse test: $PW \leq 300\mu\text{s}$ duty cycle $\leq 2\%$.
- Guaranteed by design, not subject to production testing.

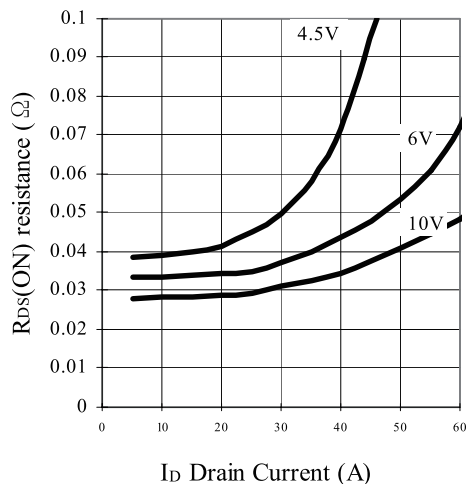
Typical Electrical Characteristics



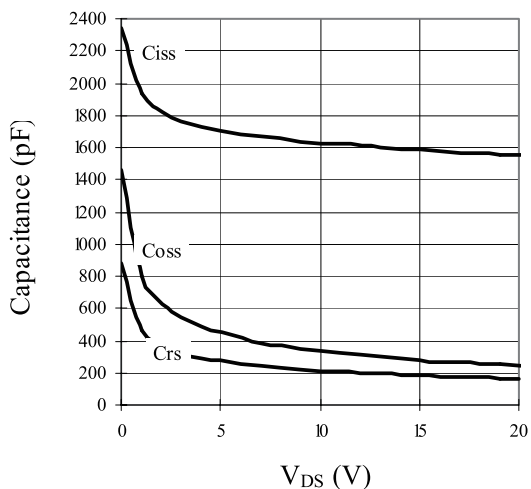
Output Characteristics



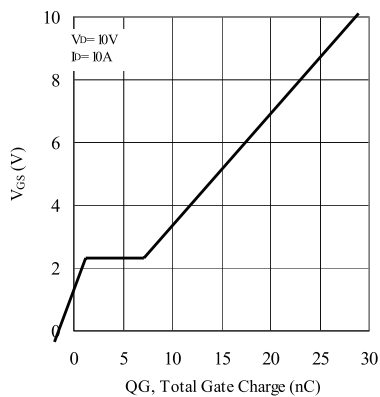
Transfer Characteristics



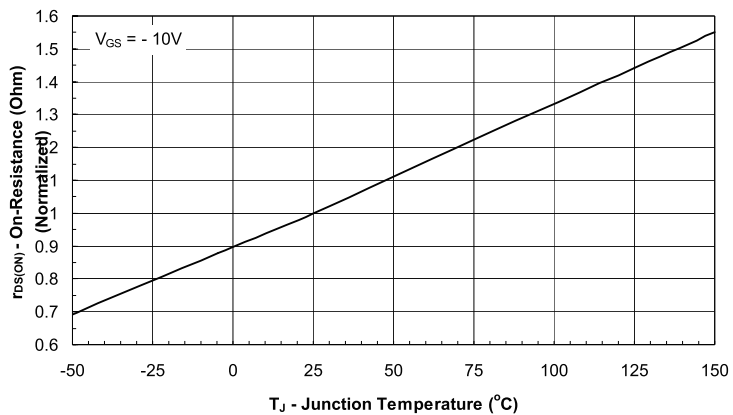
On Resistance Vs V_{GS} Voltage



Capacitance

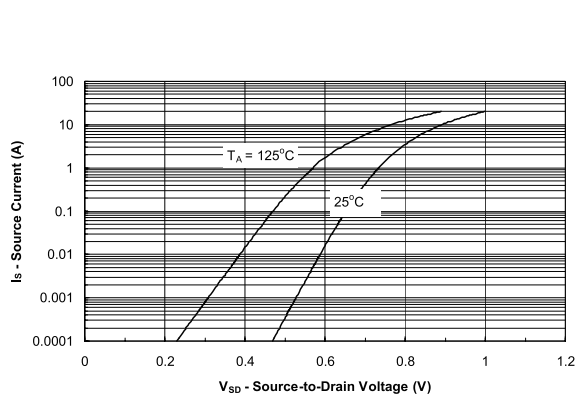


Gate Charge

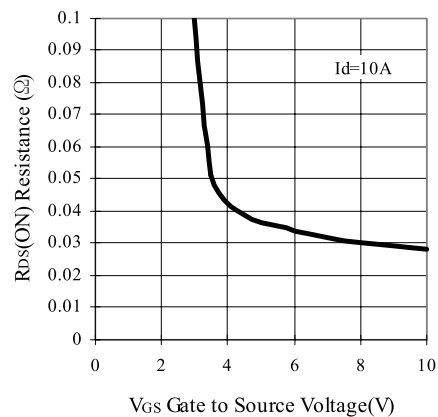


On-Resistance vs. Junction Temperature

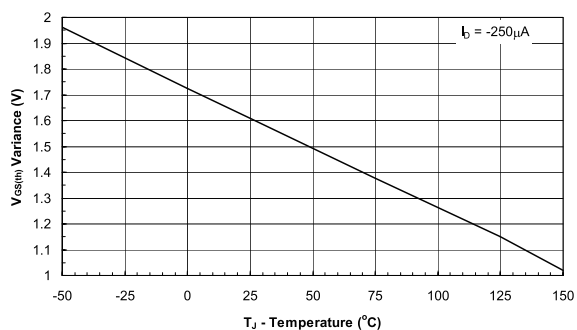
Typical Electrical Characteristics



Source-Drain Diode Forward Voltage



On-Resistance with Gate to Source Voltage



Threshold Voltage

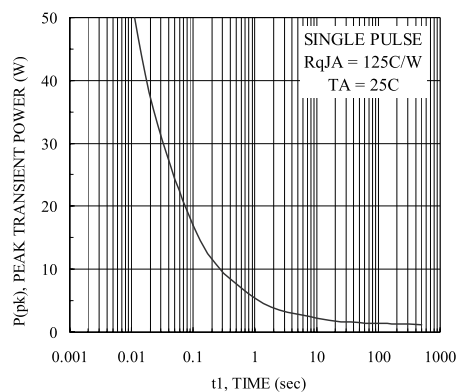


Figure 10. Single Pulse Maximum Power Dissipation

Normalized Thermal Transient Junction to Ambient

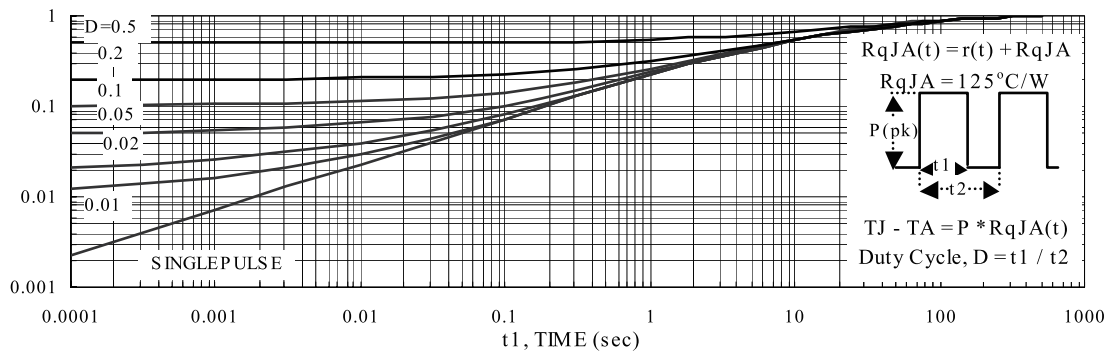
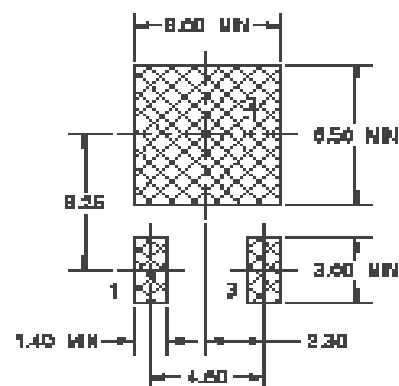
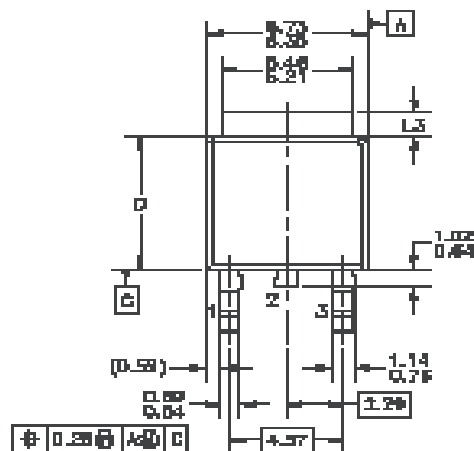
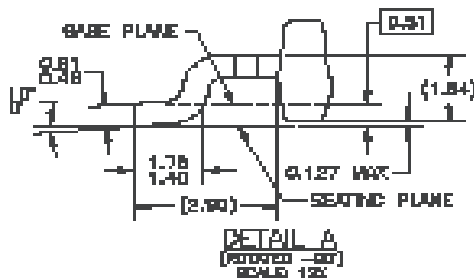
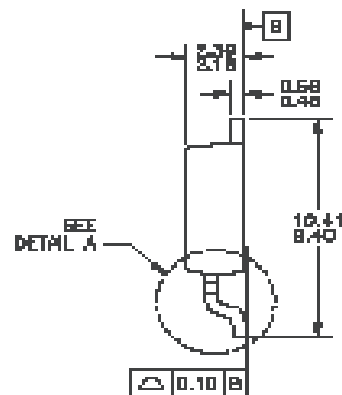
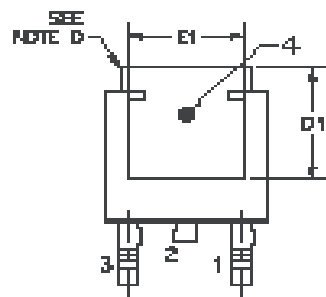


Figure 11. Transient Thermal Response Curve

Package Information



LAND PATTERN RECOMMENDATION



NOTES: UNLESS OTHERWISE SPECIFIED

ALL DIMENSIONS ARE IN MILLIMETERS.

THIS PACKAGE CONFORMS TO JEDEC, TO-262,
ISSUE C, VARIATION AA & AB, DATED NOV. 1989.

c) DIMENSIONING AND TOLERANCING PER
ASME Y14.5M-1994.

D) HEAT SINK TOP EDGE COULD BE IN CHAMFERED CORNERS OR EDGE PROTRUSION.

2) ONE-STEP L3, E1-AD1 TABLE-

	OPTION A1	OPTION A2
L2	0.00-1.27	1.62-2.09
D	0.07-0.09	0.03-0.09
E1	4.02 MM	3.01 MM
D1	2.83 MM	4.72 MM