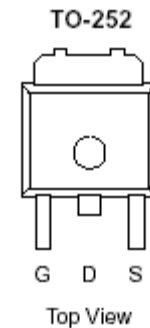
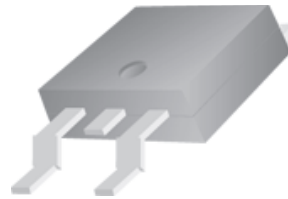


P-Channel 30-V (D-S) MOSFET

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.

- 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)
-30	59 @ $V_{GS} = -10V$	24
	95 @ $V_{GS} = -4.5V$	19

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

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	-30	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ^a	I_D	24	A
Pulsed Drain Current ^b	I_{DM}	± 40	
Continuous Source Current (Diode Conduction) ^a	I_S	-30	A
Power Dissipation ^a	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} = ±20 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 = -24 A			59	mΩ
		V _{GS} = -4.5 V, I _D = -19 A			95	
Forward Transconductance ^A	g _{fs}	V _{DS} = -15 V, I _D = -24 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 = -24 A		6.4		nC
Gate-Source Charge	Q _{gs}			1.9		
Gate-Drain Charge	Q _{gd}			2.5		
Input Capacitance	C _{iss}	V _{DS} =-15V, V _{GS} =0V, f=1MHz		520		pF
Output Capacitance	C _{oss}			130		
Reverse Transfer Capacitance	C _{rss}			70		
Switching						
Turn-On Delay Time	t _{d(on)}	V _{DD} = -15 V, R _L = 15 Ω , I _D = -24 A, V _{GEN} = -10 V, R _G = 6Ω		10		nS
Rise Time	t _r			2.8		
Turn-Off Delay Time	t _{d(off)}			53.6		
Fall-Time	t _f			46		

Notes

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

Typical Electrical Characteristics

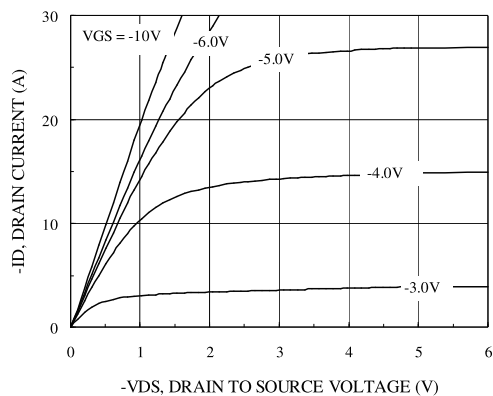


Figure 1. On-Region Characteristics

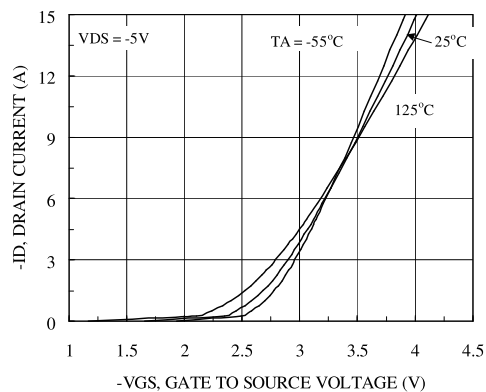


Figure 2. Body Diode Forward Voltage Variation with Source Current and Temperature

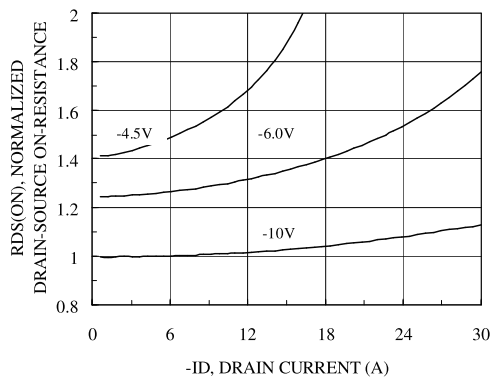


Figure 3. On Resistance Vs Vgs Voltage

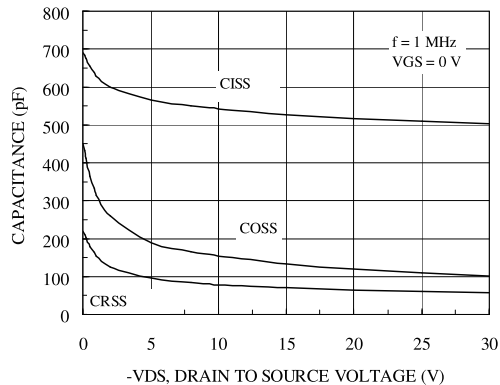


Figure 4. Capacitance Characteristics

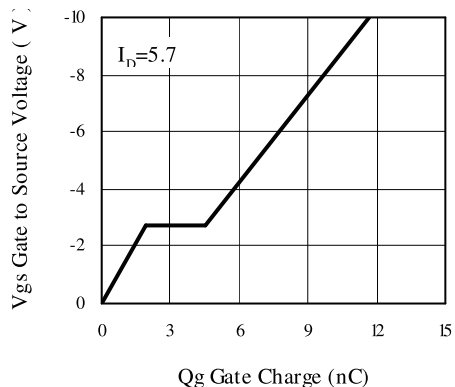


Figure 5. Gate Charge Characteristics

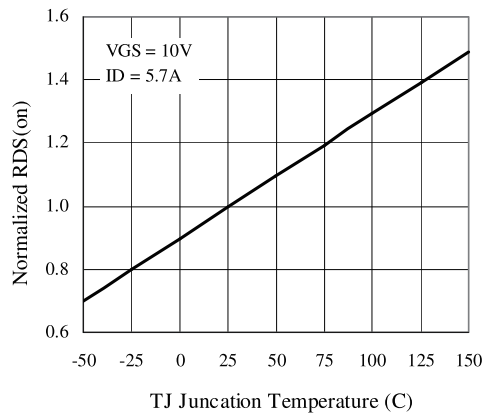


Figure 6. On-Resistance Variation with Temperature

Typical Electrical Characteristics

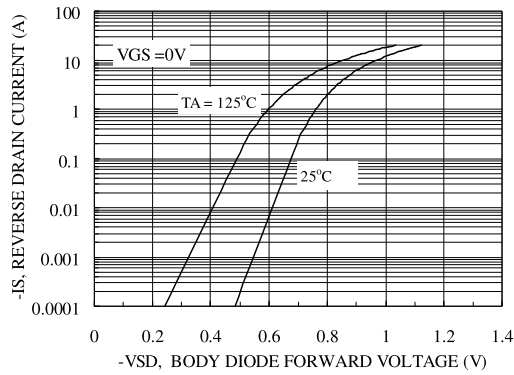


Figure 7. Transfer Characteristics

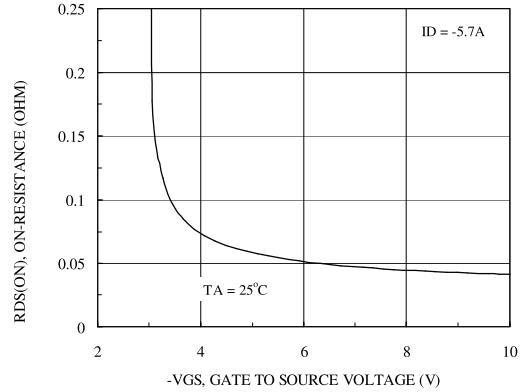


Figure 8. On-Resistance with Gate to Source Voltage

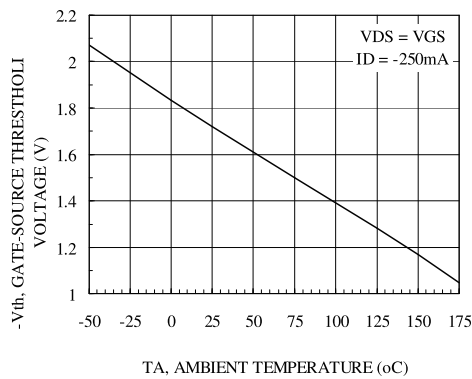


Figure 9. Vth Gate to Source Voltage Vs Temperature

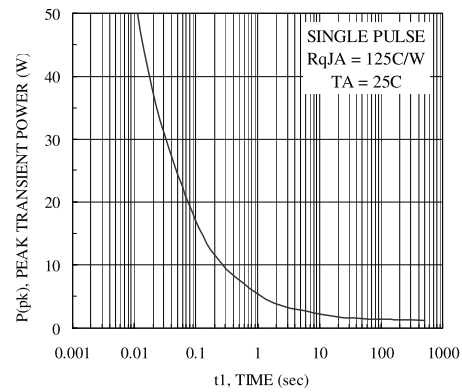


Figure 10. Single Pulse Maximum Power Dissipation

Normalized Thermal Transient Junction to Ambient

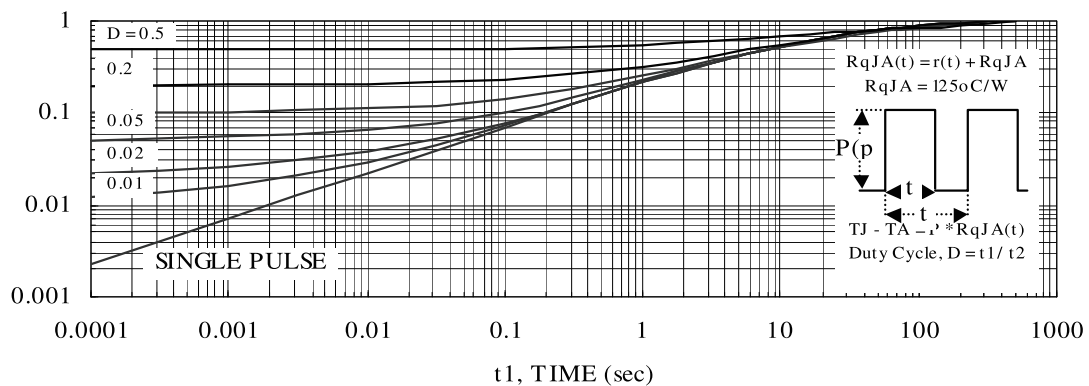
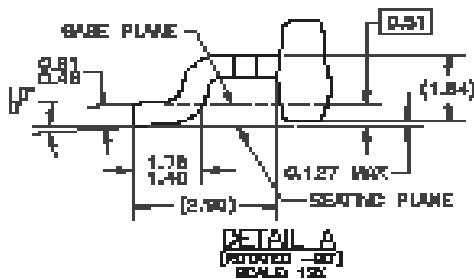
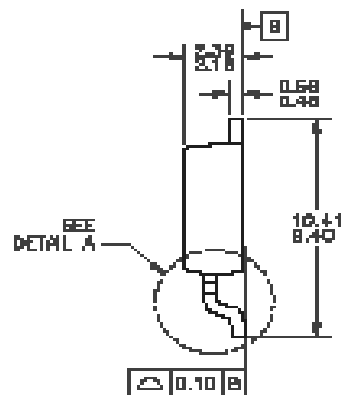
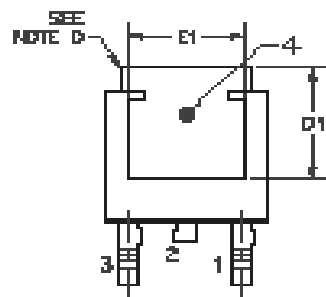
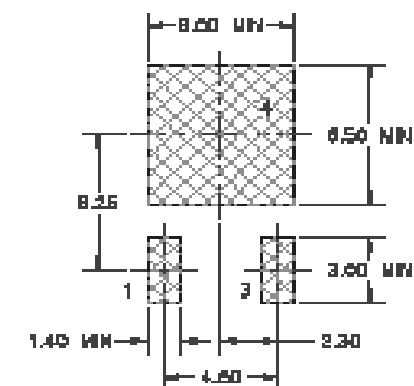
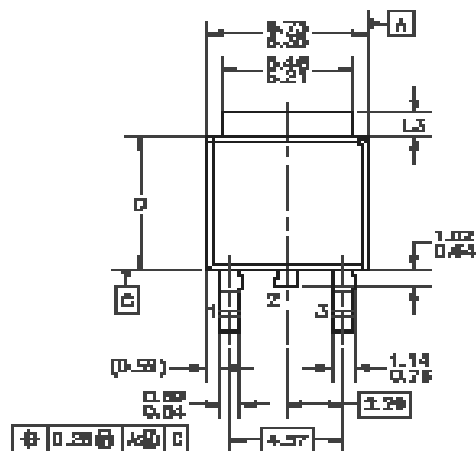


Figure 11. Transient Thermal Response Curve

Package Information



- NOTES: UNLESS OTHERWISE SPECIFIED
- ALL DIMENSIONS ARE IN MILLIMETERS.
 - THIS PACKAGE CONFORMS TO JEDEC, TO-263, ISSUE C, VARIATION AA, 30 DE, DATED NOV. 1999.
 - DIMENSIONING AND TOLERANCING PER ASME Y14.5M-1994.
 - HEAT SINK TOP EDGE COULD BE IN CHAMFERED CORNERS OR EDGE PROTRUSION.
 - DIMENSIONS L3, D, E1 AND D1 TABLE:

	OPTION A0	OPTION A0
L3	0.89-1.27	1.02-2.54
D	8.57-8.89	8.50-8.89
E1	4.32 MIN	3.81 MIN
D1	3.41 MIN	4.27 MIN