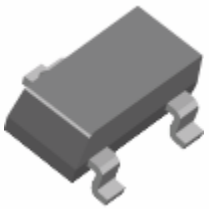
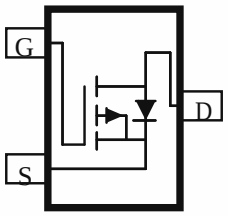
P - Channel Logic Level MOSFET

These miniature surface mount MOSFETs utilize High Cell Density process. Low $r_{DS(on)}$ assures minimal power loss and conserves energy, making this device ideal for use in power management circuitry. Typical applications are voltage control small signal switch, power management in portable and battery-powered products such as computer portable electronics and other battery power application.

- Low $r_{DS(on)}$ Provides Higher Efficiency and Extends Battery Life
- Fast Switch
- Low Gate Charge
- Miniature SOT-23 Surface Mount Package Saves Board Space

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
-30	0.20 @ V_{GS} = -10 V	-2.1
	0.30 @ V_{GS} = -4.5V	-1.7





ABSOLUTE MAXIMUM RATINGS (T_A = 25 °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]	T_A=25°C	I_D	-2.1	A
	T_A=70°C		-1.7	
Pulsed Drain Current[b]		I_{DM}	±10	
Continuous Source Current (Diode Conduction)[a]		I_S	-0.4	A
Power Dissipation[a]	T_A=25°C	P_D	1.25	W
	T_A=70°C		0.8	
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 <= 5 sec	R_{THJA}	250	°C/W
	Steady-State		285	

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						
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -24 V, V_{GS} = 0 V			-1	µA
		V_{DS} = -24 V, V_{GS} = 0 V, T_J = 55°C			-10	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0 V, V_{GS} = ±20 V			±100	nA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250 uA	-1.30			V
On-State Drain Current[A]	$I_{D(on)}$	V_{DS} = -5 V, V_{GS} = -4.5 V	-3			A
Drain-Source On-Resistance[A]	$r_{DS(on)}$	V_{GS} = -10 V, I_D = -2.1 A			0.20	Ω
		V_{GS} = -4.5 V, I_D = -1.7 A			0.30	
Forward Tranconductance[A]	g_{fs}	V_{DS} = -5 V, I_D = -2.1 A		2		S
Diode Forward Voltage	V_{SD}	I_S = -0.4 A, V_{GS} = 0 V		-0.70	-1.2	V
Dynamic[b]						
Total Gate Charge	Q_g	V_{DS} = -10 V, V_{GS} = -5 V, I_D = -2.1 A		3.4		nC
Gate-Source Charge	Q_{gs}			0.8		
Gate-Drain Charge	Q_{gd}			1.5		
Turn-On Delay Time	$t_{d(on)}$	V_{DS} = -10 V, I_D = -1.1 A, R_G = 50 Ω, V_{GEN} = -10 V		8		ns
Rise Time	t_r			18		
Turn-Off Delay Time	$t_{d(off)}$			52		
Fall-Time	t_f			39		

Notes

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

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

Typical Electrical Characteristics

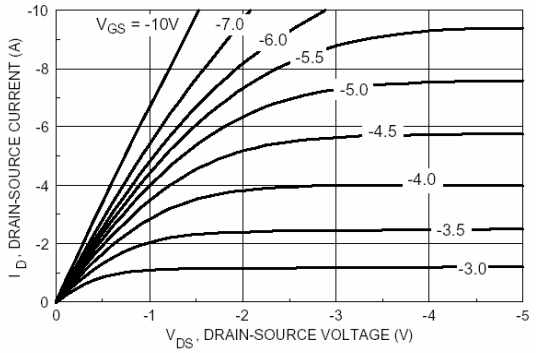


Figure 1. On-Region Characteristics

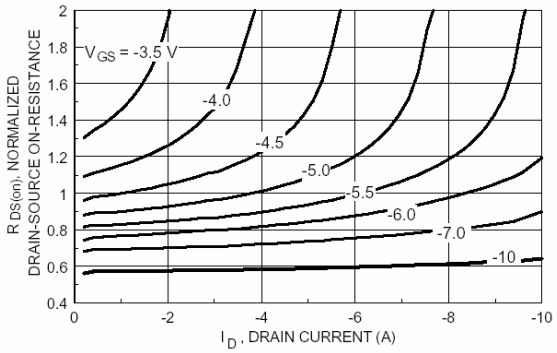


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage

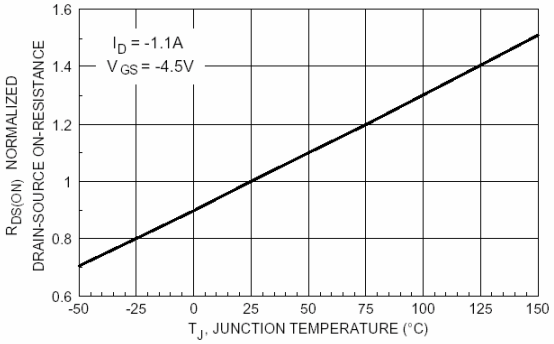


Figure 3. On-Resistance Variation with Temperature

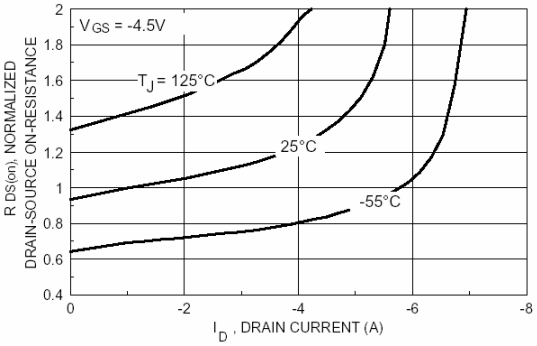


Figure 4. On-Resistance Variation with Gate to Source Voltage

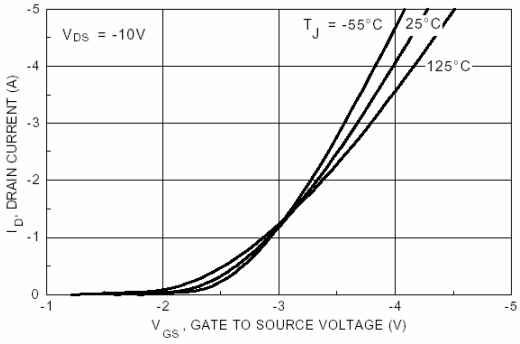


Figure 5. Transfer Characteristics

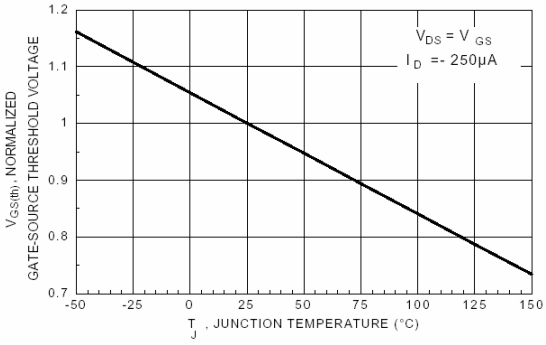


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

Typical Electrical Characteristics

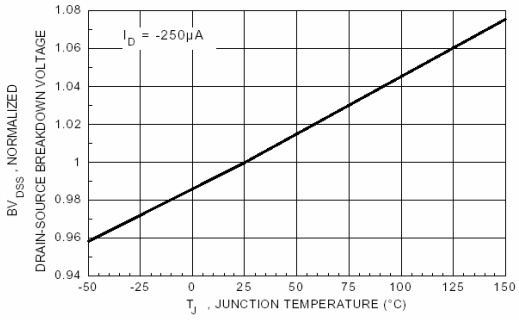


Figure 7. Breakdown Voltage Variation with Temperature.

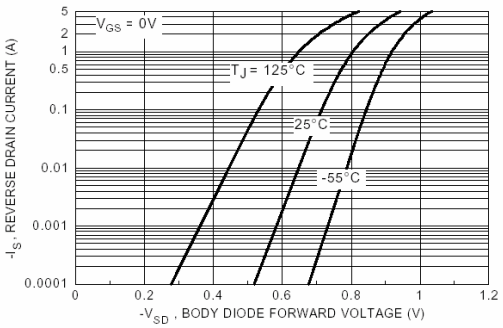


Figure 8. Body Diode Forward Voltage Variation with Source Current and Temperature.

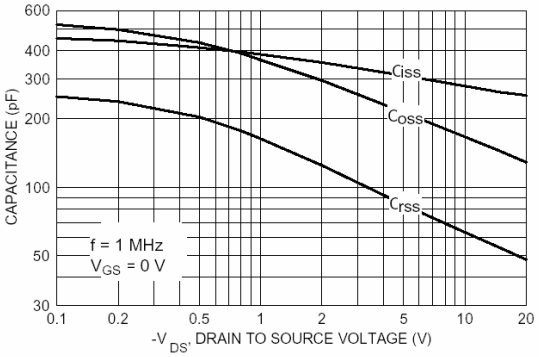


Figure 9. Capacitance Characteristic

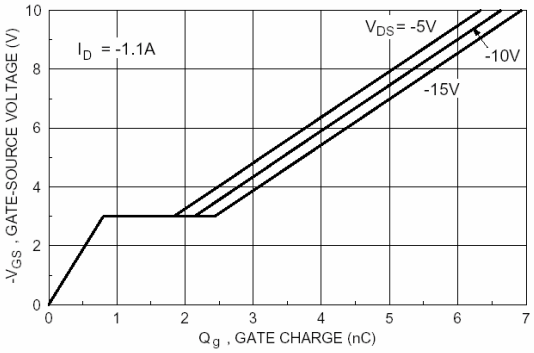


Figure 10. Gate Charge Characteristic

Normalized Thermal Transient Impedance, Junction to Ambient

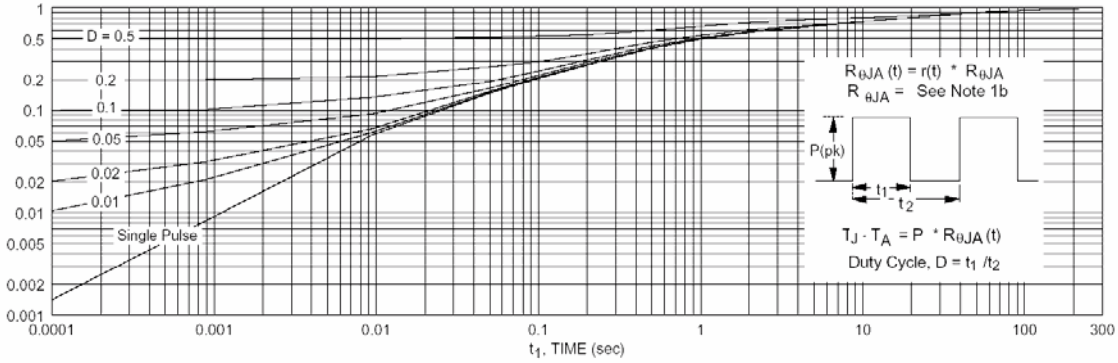


Figure 11. Transient Thermal Response Curve

Typical Electrical Characteristics

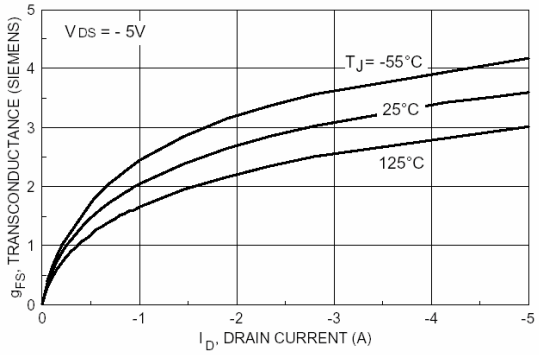


Figure 12. Transconductance Variation With Current & Temperature

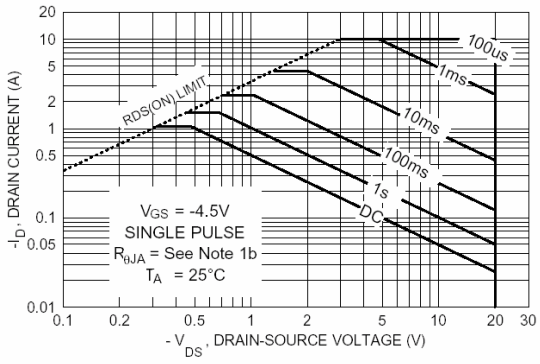


Figure 13. Maximum Safe Operation Area

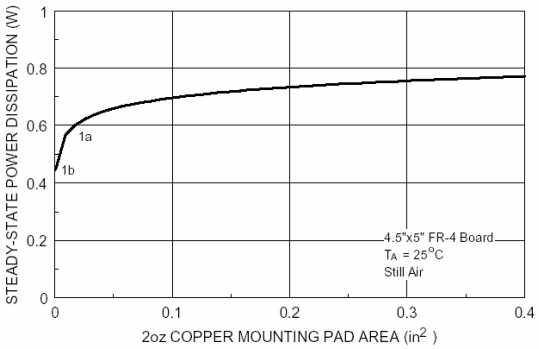


Figure 14. SOT-3 Maximum Steady-State Variation Power Dissipation versus Copper Pad Area

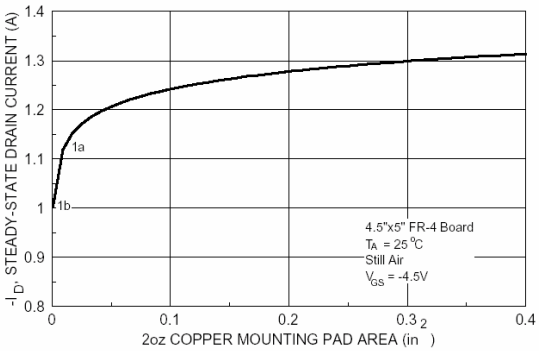
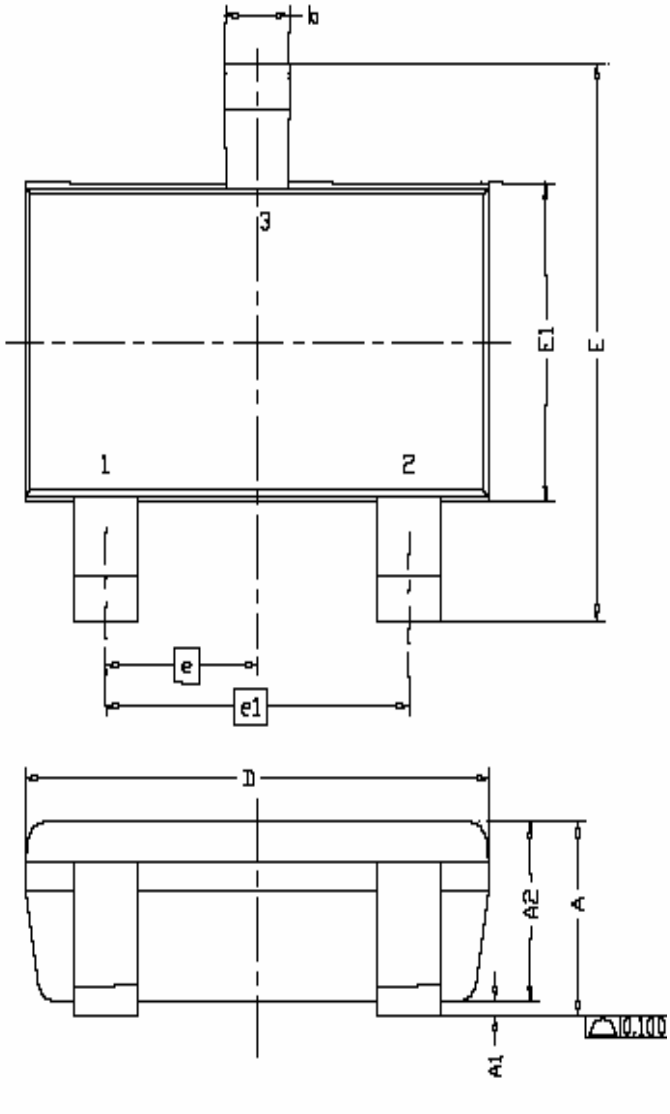


Figure 15. Maximum State-State Drain Current Versus Copper Pad Area

Package Information



DIM.	MILLIMETERS		
	MIN	NOM	MAX
A	0.935	0.95	1.10
A1	0.01	---	0.10
A2	0.85	0.90	0.925
b	0.30	0.40	0.50
c	0.10	0.15	0.25
D	2.70	2.90	3.10
E	2.60	2.80	3.00
E1	1.40	1.60	1.80
e	0.95 BSC		
e1	1.90 BSC		
L	0.30	0.40	0.60
L1	0.60REF		
L2	0.25BSC		
R	0.10	---	---
θ	0°	4°	8°
θ1	7°NOM