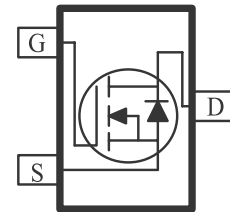
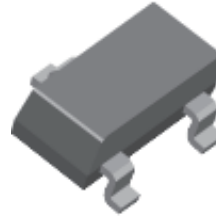


N-Channel Logic Level MOSFET

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 power switch, 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 Gate Charge
- Fast Switch
- Miniature SOT-23 Surface Mount Package Saves Board Space



PRODUCT SUMMARY

V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
30	0.16 @ $V_{GS} = 10$ V	1.4
	0.25 @ $V_{GS} = 4.5$ V	1.2

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	$T_A = 25^\circ\text{C}$	I_D	1.2	A
	$T_A = 70^\circ\text{C}$		1	
Pulsed Drain Current ^b		I_{DM}	± 10	
Continuous Source Current (Diode Conduction) ^a		I_S	1.3	A
Power Dissipation ^a	$T_A = 25^\circ\text{C}$	P_D	0.5	W
	$T_A = 70^\circ\text{C}$		0.5	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

Parameter		Symbol	Maximum	Units
Maximum Junction-to-Ambient ^a	$t \leq 5$ sec	R_{THJA}	250.0	$^\circ\text{C/W}$

Notes

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

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

Parameter	Symbol	Test Conditions	Limits			Unit
			Min	Typ	Max	
Switch Off Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 uA	30			V
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			10	
Switch On Characteristics						
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250 uA	0.8	1.7	2.1	V
Drain-Source On-Resistance ^A	r _{DS(on)}	V _{GS} = 10 V, I _D = 1.4 A		125	160	mΩ
		V _{GS} = 4.5 V, I _D = 1.2 A T _J = 55°C		230	260	
		V _{GS} = 4.5 V, I _D = 1.2 A		190	250	
Forward Tranconductance ^A	g _{fs}	V _{DS} = 5 V, I _D = 1.2 A		1.8		S
On-State Drain Current ^A	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 4.5 V	3.5			A
Diode Forward Voltage	V _{SD}	I _S = 1.2 A, V _{GS} = 0 V		0.7	1.2	V
Dynamic ^b						
Total Gate Charge	Q _g	V _{DS} = 10 V, V _{GS} = 4.5 V, I _D = 1.2 A R _L = 6 Ω		1.9	2.7	nC
Gate-Source Charge	Q _{gs}			0.5		
Gate-Drain Charge	Q _{gd}			0.9		
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DS} = 10 V, R _L = 50 Ω, I _D = 1 A, V _{GEN} = 10 V		6	15	ns
Rise Time	t _r			15	31	
Turn-Off Delay Time	t _{d(off)}			15	32	
Fall-Time	t _f			18	42	

Notes

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

Typical Electrical Characteristics (N-Channel)

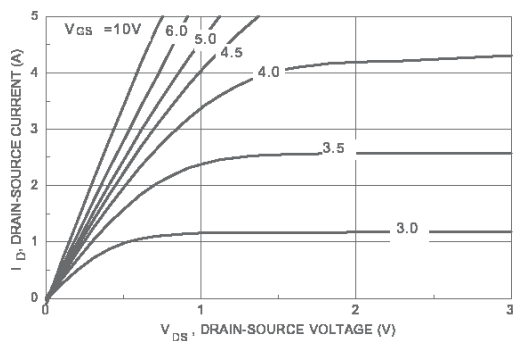


Figure 1. On-Region Characteristics

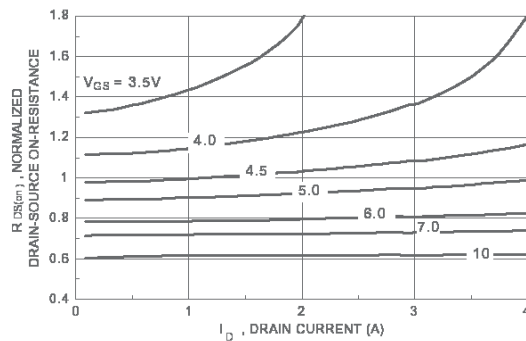


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage

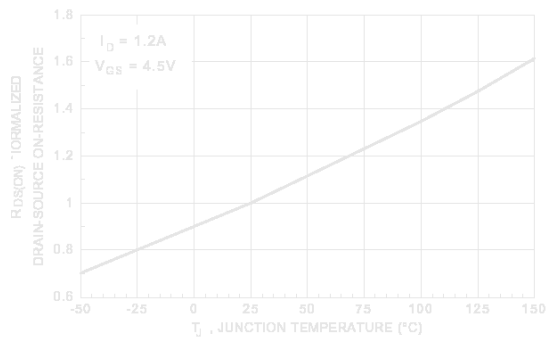


Figure 3. On-Resistance Variation with Temperature

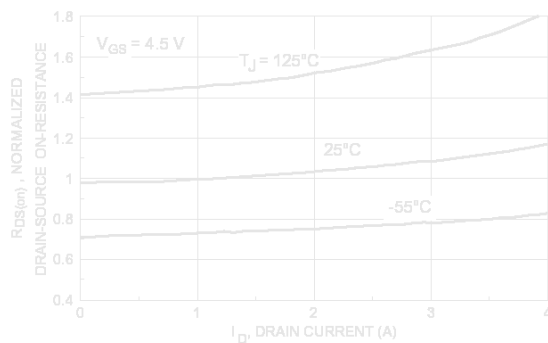


Figure 4. On-Resistance Variation with Gate to Source Voltage

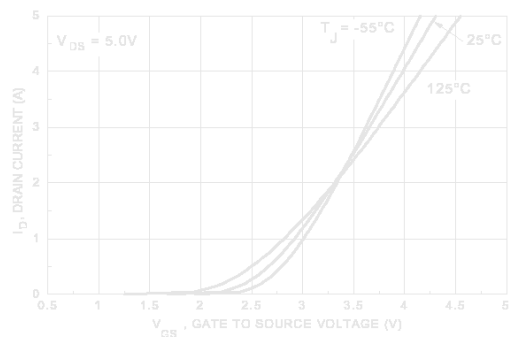


Figure 5. Transfer Characteristics

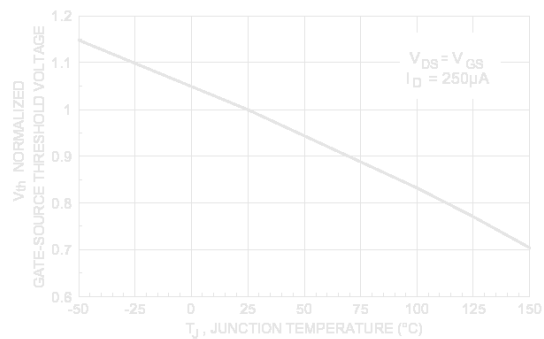


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

Typical Electrical Characteristics (N-Channel)

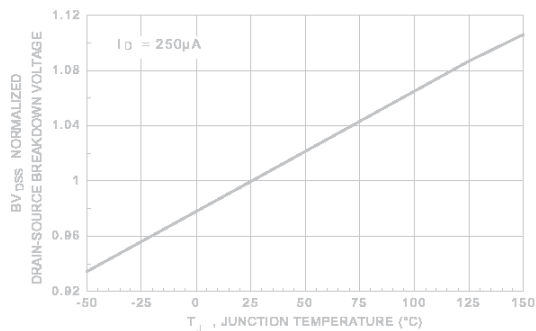


Figure 7. Breakdown Voltage Variation With Temperature

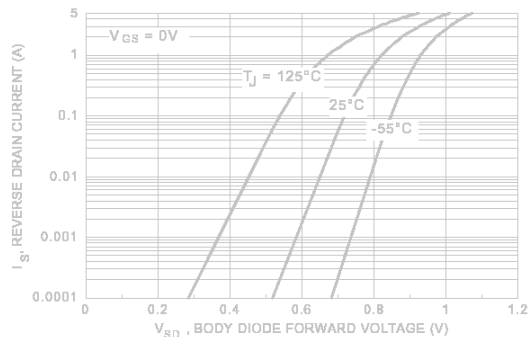


Figure 8. Body Diode Forward Voltage With Source Current Temperature

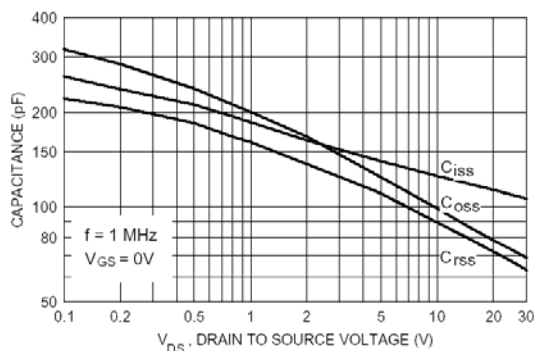


Figure 9. Capacitance Characteristic

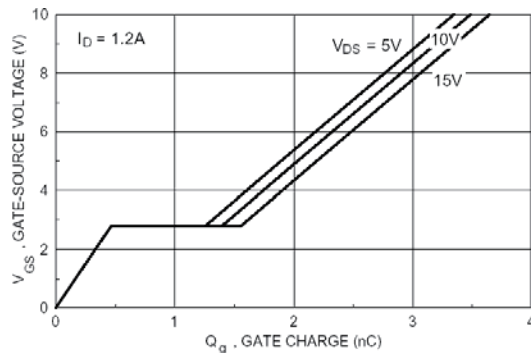


Figure 10. Gate Charge Characteristic

Normalized Thermal Transient Junction to Ambient

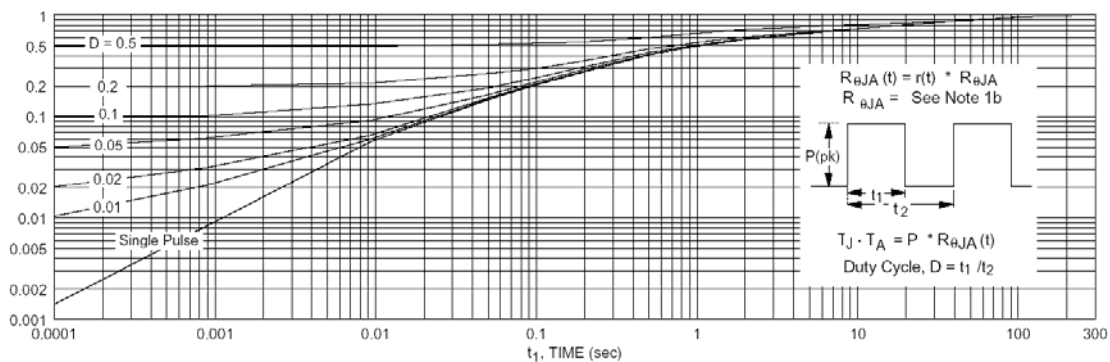


Figure 11. Transient Thermal Response Curve

Typical Electrical Characteristics (N-Channel)

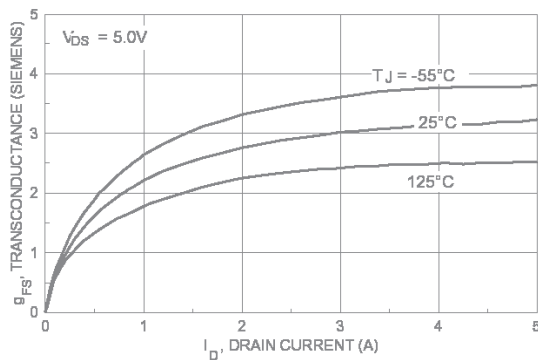


Figure 12. Transconductance Variation With Current & Temperature

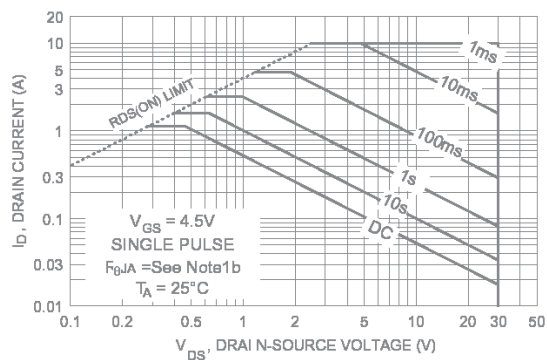


Figure 13. Maximum Safe Operation Area

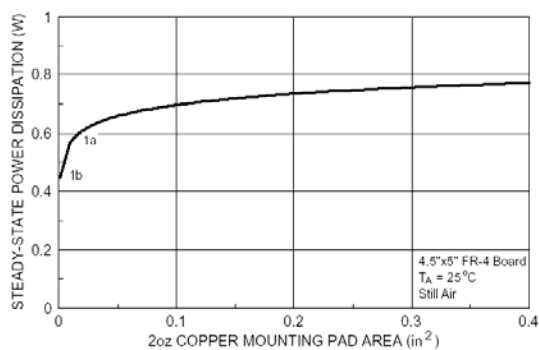


Figure 14. SOT-3 Maximum Steady-State Variation Power Dissipation versus Copper Pad Area

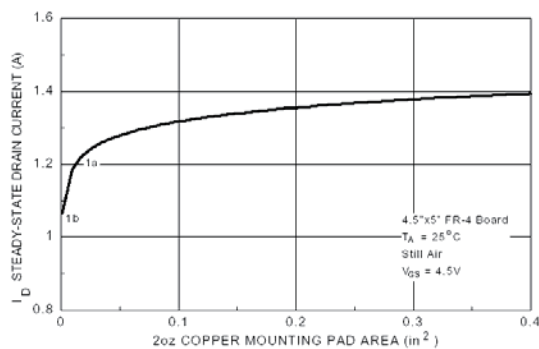
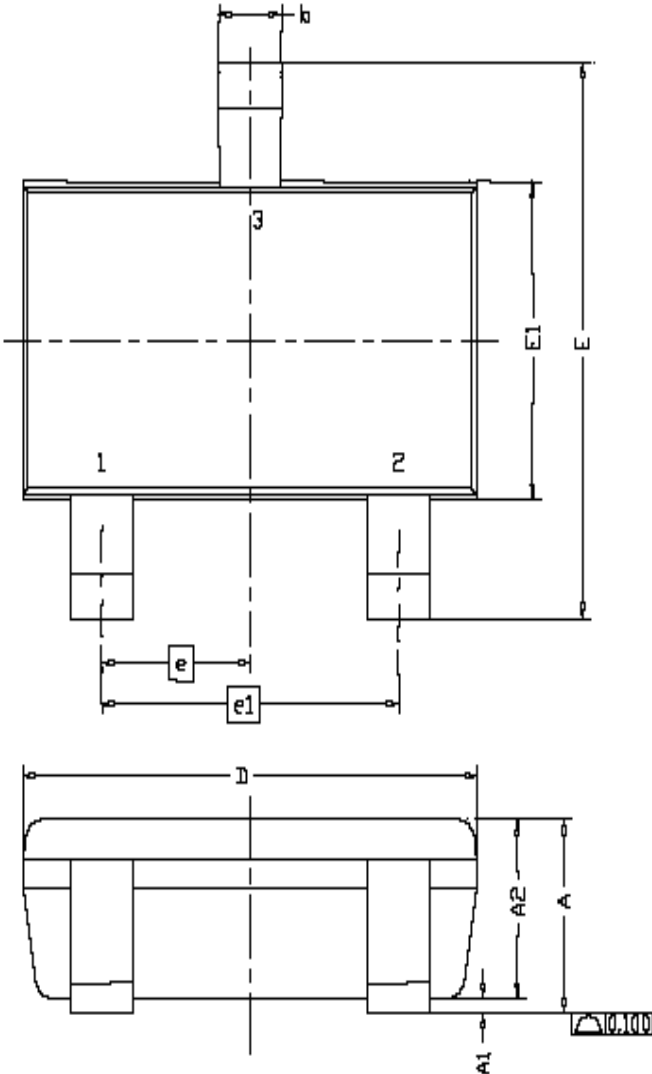


Figure 15. Maximum State-State Drain Current Versus Copper Pad Area

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		

