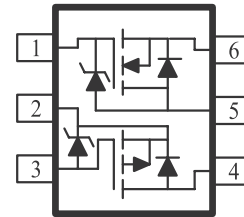
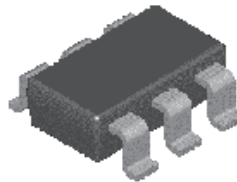


N & P-Channel 25-V (D-S) MOSFET

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 DC-DC converters, 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
- Miniature TSOP-6 Surface Mount Package Saves Board Space



V_{DS} (V)	$r_{DS(on)}$ (Ω)	I_D (A)
25	0.45 @ $V_{GS} = 4.5V$	1.2
	0.72 @ $V_{GS} = 2.5V$	1.0
-25	1.0 @ $V_{GS} = -4.5V$	-0.85
	1.5 @ $V_{GS} = -2.5V$	-0.75

ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C UNLESS OTHERWISE NOTED)					
Parameter		Symbol	N-Channel	P-Channel	Units
Drain-Source Voltage		V _{DS}	25	-25	V
Gate-Source Voltage		V _{GS}	8	-8	
Continuous Drain Current ^a	T _A =25°C	I _D	1.2	-0.9	A
	T _A =70°C		0.95	-0.65	
Pulsed Drain Current ^b		I _{DM}	±3.5	±2.5	
Continuous Source Current (Diode Conduction) ^a		I _S	1	-1	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	$t \leq 5 \text{ sec}$	R_{THJA}	100	$^\circ C/W$

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
			Ch	Min	Typ	Max	
Static							
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0 V, I _D = 250 uA	N	25			V
		V _{GS} = 0 V, I _D = -250 uA	P	-25			
Gate-Threshold Voltage	V _{GS(th)}	V _{GS} = V _{DS} , I _D = 250 uA	N	0.65	0.81	1.5	V
		V _{GS} = V _{DS} , I _D = -250 uA	P	-0.65	-0.83	-1.5	
Gate-Body Leakage Current	I _{GSS}	V _{DS} = 0 V, V _{GS} = 8 V	N			100	uA
		V _{DS} = 0 V, V _{GS} = -8 V	P			-100	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 20 V, V _{GS} = 0 V	N			1	uA
		V _{DS} = 20 V, V _{GS} = 0 V, T _J = 55°C				10	
On-State Drain Current ^A	I _{D(on)}	V _{DS} = 5 V, V _{GS} = 4.5 V	N	1			A
		V _{DS} = -5 V, V _{GS} = -4.5 V	P	-1			
Drain-Source On-Resistance ^A	r _{DS(on)}	V _{GS} = 4.5 V, I _D = 0.5 A	N		0.35	0.45	Ω
		V _{GS} = 2.5 V, I _D = 0.2 A			0.45	0.72	
		V _{GS} = -4.5 V, I _D = -0.41 A	P		0.860	1.09	
		V _{GS} = -2.5 V, I _D = -0.2 A			1.15	1.50	
Forward Transconductance ^A	g _{fs}	V _{DS} = 5 V, I _D = 0.5 A	N		1.45		S
		V _{DS} = -5 V, I _D = 0.4 A	P		0.9		
Dynamic ^b							
Total Gate Charge	Q _g	N-Channel V _{DS} =5V, V _{GS} =4.5V, I _D =0.5A	N		1.64	2.3	nC
			P		1.1	1.5	
Gate-Source Charge	Q _{gs}	P-Channel V _{DS} =-5V, V _{GS} =-4.5V, I _D =-0.25A	N		0.4		
			P		0.33		
Gate-Drain Charge	Q _{gd}		N		0.45		
			P		0.26		
Switching							
Turn-On Delay Time	td(on)	N-Chaneel V _{DD} =6V, V _{GS} =4.5V, I _D =0.5A , R _{GEN} =50Ω, P-Channel V _{DD} =-6V, V _{GS} =-4.5V, I _D =-0.41A R _{GEN} =50Ω	N		3	6	nS
			P		7	21	
Rise Time	tr		N		8.5	18	
			P		9	19	
Turn-Off Delay Time	td(off)	N		17	30		
		P		55	112		
Fall-Time	tf	N		13	25		
		P		35	71		

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)

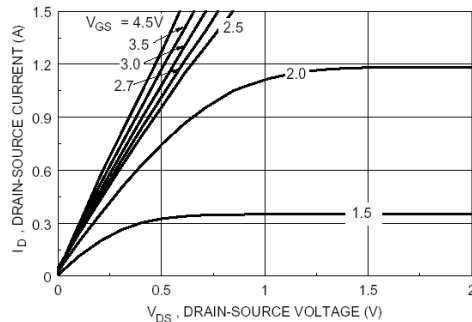


Figure 1. On-Region Characteristics.

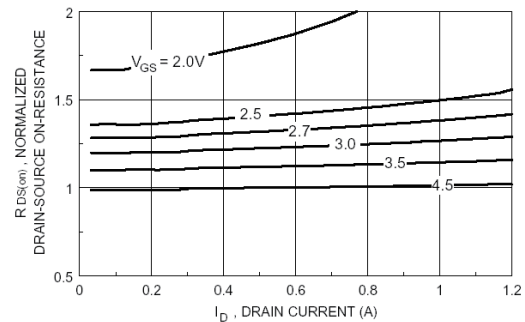


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

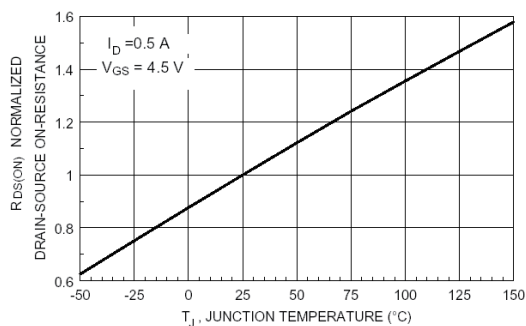


Figure 3. On-Resistance Variation with Temperature.

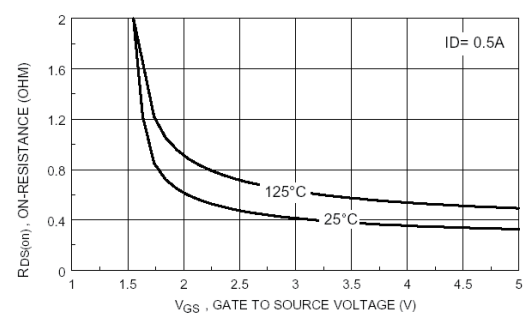


Figure 4. On Resistance Variation with Gate-To-Source Voltage.

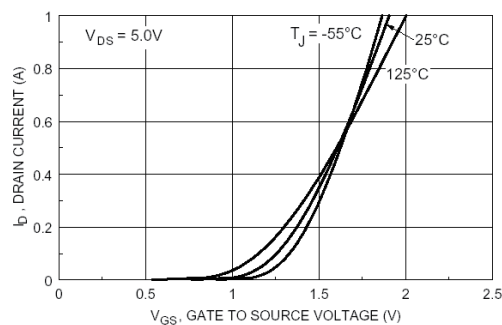


Figure 5. Transfer Characteristics.

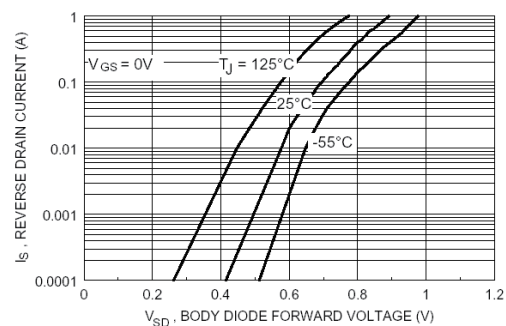


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.

Typical Electrical Characteristics (N-Channel)

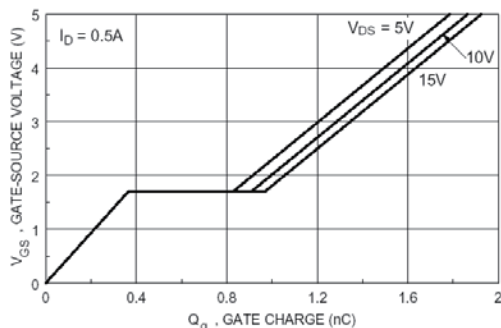


Figure 7. Gate Charge Characteristics.

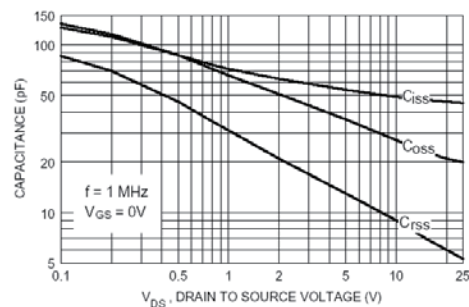


Figure 8. Capacitance Characteristics.

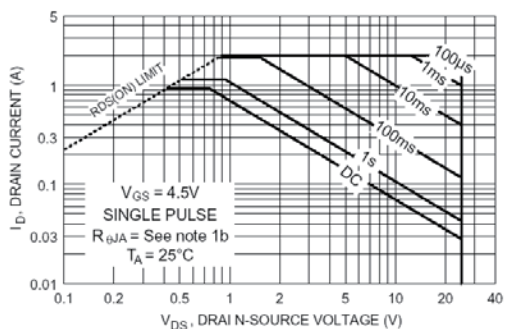


Figure 9. Maximum Safe Operating Area.

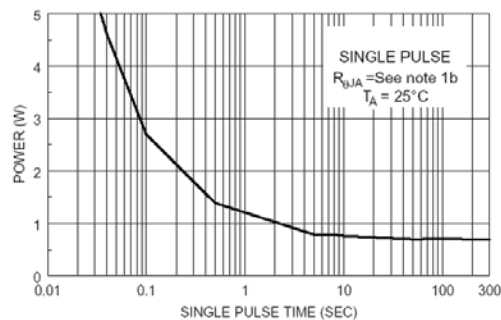
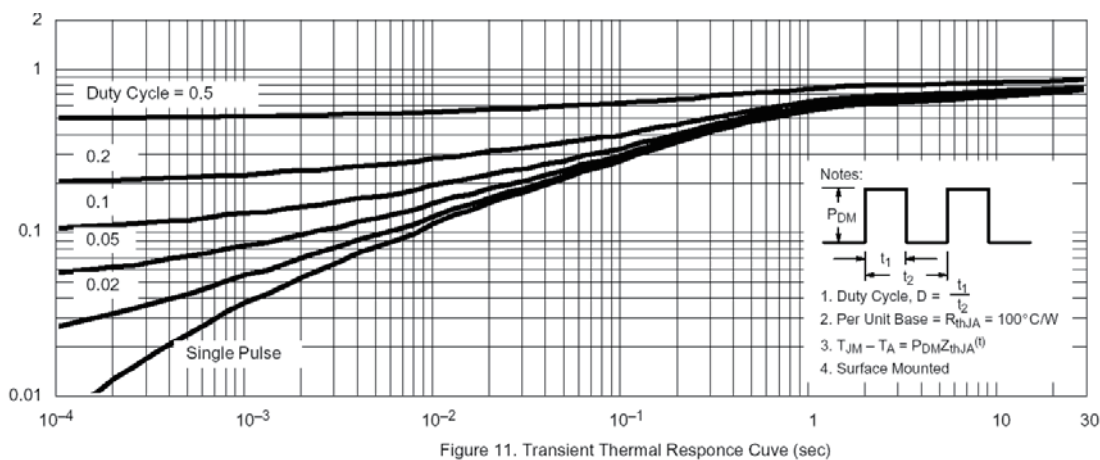


Figure 10. Single Pulse Maximum Power Dissipation.

Normalized Thermal Transient Junction to Ambient



Typical Electrical Characteristics (P-Channel)

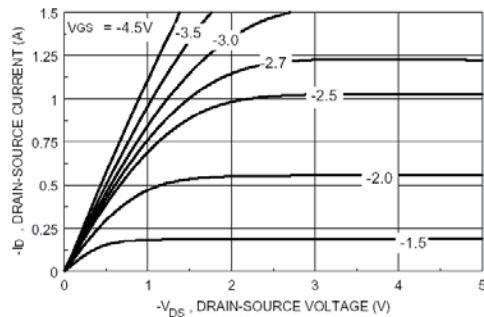


Figure 12. On-Region Characteristics.

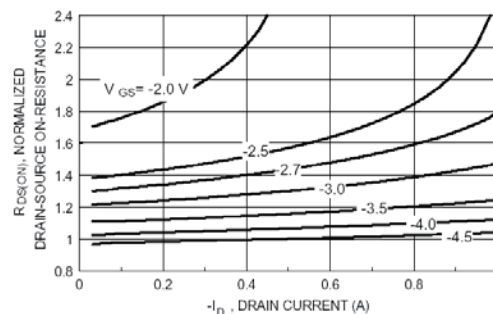


Figure 13. On-Resistance Variation with Drain Current and Gate Voltage.

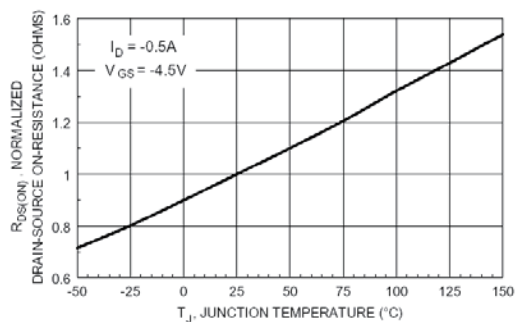


Figure 14. On-Resistance Variation with Temperature.

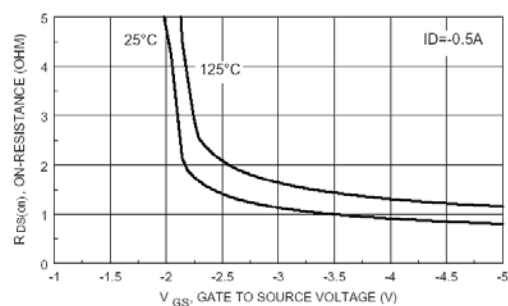


Figure 15. On Resistance Variation with Gate-To- Source Voltage.

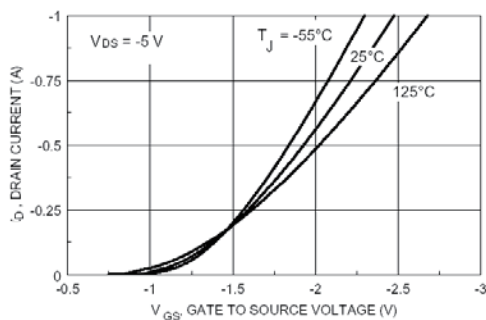


Figure 16. Transfer Characteristics.

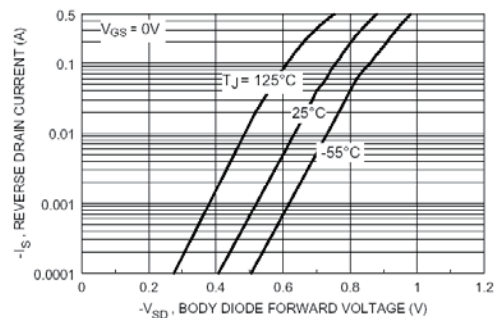


Figure 17. Body Diode Forward Voltage Variation with Source Current and Temperature.

Typical Electrical Characteristics (P-Channel)

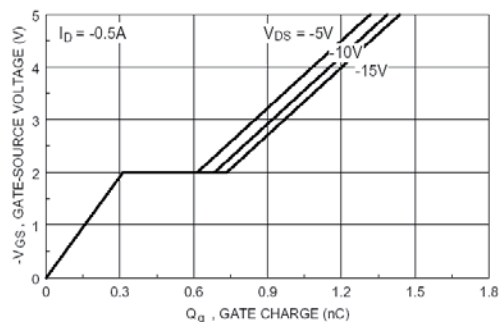


Figure 18. Gate Charge Characteristics.

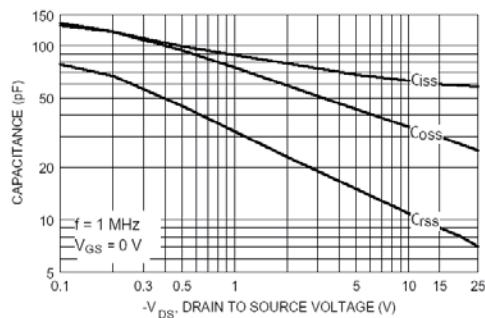


Figure 19. Capacitance Characteristics.

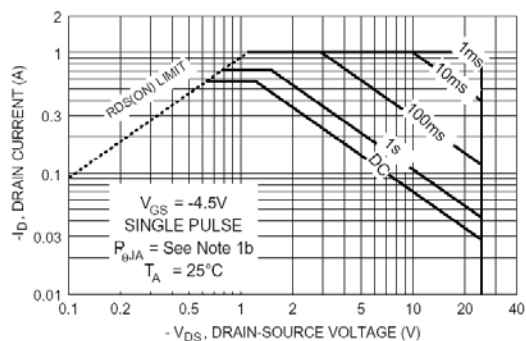


Figure 20. Maximum Safe Operating Area.

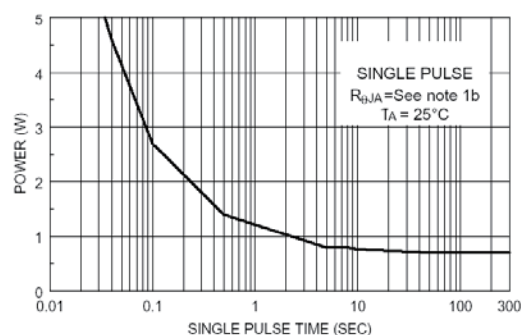


Figure 21. Single Pulse Maximum Power Dissipation.

Normalized Thermal Transient Junction to Ambient

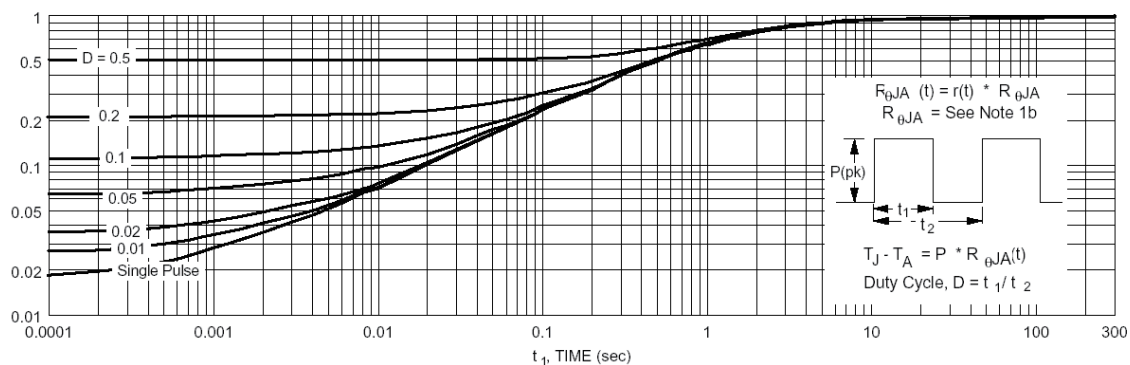
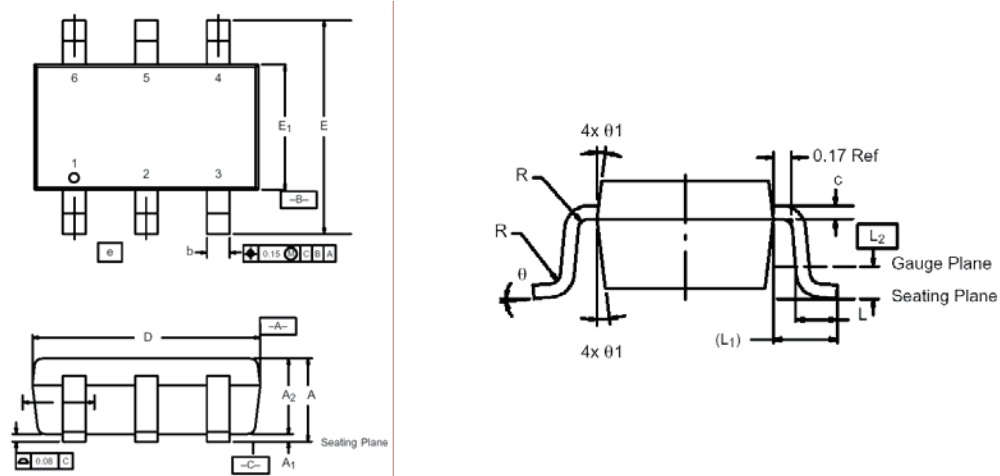


Figure 22. Transient Thermal Response Curve.

Package Information

TSOP-6: 6LEAD



Dim	MILLIMETERS			INCHES		
	Min	Nom	Max	Min	Nom	Max
A	0.91	—	1.10	0.036	—	0.043
A ₁	0.01	—	0.10	0.0004	—	0.004
A ₂	0.84	—	1.00	0.033	0.038	0.039
b	0.30	0.32	0.45	0.012	0.013	0.018
c	0.10	0.15	0.20	0.004	0.006	0.008
D	2.95	3.05	3.10	0.116	0.120	0.122
E	2.70	2.85	2.98	0.106	0.112	0.117
E ₁	1.55	1.65	1.70	0.061	0.065	0.067
e	1.00 BSC			0.0394 BSC		
L	0.35	—	0.50	0.014	—	0.020
L ₁	0.60 Ref			0.024 Ref		
L ₂	0.25 BSC			0.010 BSC		
R	0.10	—	—	0.004	—	—
θ	0°	4°	8°	0°	4°	8°
θ ₁	7° Nom			7° Nom		