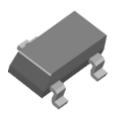
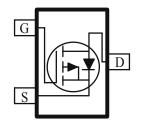
P-Channel 20-V (D-S) MOSFET

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.

PRODUCTSUMMARY					
V _{DS} (V)	r _{DS(on)} (OHM)	$I_{D}(A)$			
-20	$0.079 @V_{CS} = -4.5V$	-1.7			
-20	$0.110 @V_{CS} = -2.5V$	-1.5			

- $\begin{array}{ll} \bullet & \quad Low \; r_{DS(on)} \; provides \; higher \; efficiency \; and \\ extends \; battery \; life \\ \end{array}$
- Low thermal impedance copper leadframe SC70-3 saves board space
- Fast switching speed
- High performance trench technology





ABSOLUTE MAXIMUM RATINGS (T _A = 25 °C UNLESS OTHERWISE NOTED)						
Parameter			Maximum	Units		
Drain-Source Voltage			-20	V		
Gate-Source Voltage			±8	V		
	T _A =25°C	т	-1.7			
Continuous Drain Current ^a	$T_A=25^{\circ}C$ $T_A=70^{\circ}C$	_{ID}	-1.4	A		
Pulsed Drain Current ^b			-2.5			
Continuous Source Current (Diode Conduction) ^a		I_S	±0.28	A		
D	$T_A=25^{\circ}C$	D	0.34	W		
Power Dissipation ^a	$T_A=25^{\circ}C$ $T_A=70^{\circ}C$	FD	0.22	**		
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55 to 150	°C		

THERMAL RESISTANCE RATINGS					
Parameter	Symbol	Maximum	Units		
N	$t \le 5 \sec$	D	375	°C/11/	
Maximum Junction-to-Ambient ^a	Steady-State	R _{THJA}	430		

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)							
Donomotor	Causala a l	Total Constitution	Limits			Unit	
Parameter	Symbol	Test Conditions	Min	Тур	Max	Umt	
Static	-		<u>-</u>			<u>-</u>	
Gate-Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_{D} = -250 \text{ uA}$	-0.4			V	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0 \ V, \ V_{GS} = \pm 8 \ V$			±100	nA	
Zero Gate Voltage Drain Current	I _{DSS}	$V_{DS} = -16 \text{ V}, V_{GS} = 0 \text{ V}$			-1	А	
Zero Gate Voltage Diam Current	¹ DSS	$V_{DS} = -16 \text{ V}, V_{GS} = 0 \text{ V}, T_J = 55^{\circ} \text{C}$			-10	uA	
On-State Drain Current ^A	I _{D(on)}	$V_{DS} = -5 \text{ V}, V_{GS} = -4.5 \text{ V}$	-5			A	
Dunin Grand On Braintan A	r _{DS(on)}	$V_{GS} = -4.5 \text{ V}, I_D = -1.7 \text{ A}$			79	mΩ	
Drain-Source On-Resistance ^A		$V_{GS} = -2.5 \text{ V}, I_D = -1.5 \text{ A}$			110		
Forward Tranconductance ^A	$g_{ m fs}$	$V_{DS} = -5 \text{ V}, I_D = -1.25 \text{ A}$		9		S	
Diode Forward Voltage	V_{SD}	$I_S = -0.46 \text{ A}, V_{GS} = 0 \text{ V}$		-0.65		V	
Dynamic ^b							
Total Gate Charge	Q_{g}	$V_{DS} = -10 \text{ V}, V_{GS} = -4.5 \text{ V},$		7.2			
Gate-Source Charge	Q_{gs}	$V_{DS} = -10 \text{ V}, V_{GS} = -4.3 \text{ V},$ $I_{D} = -1.7 \text{ A}$		1.7		nC	
Gate-Drain Charge	Q_{gd}	$I_D = -1.7$ A		1.5			
Turn-On Delay Time	$t_{d(on)}$			10			
Rise Time	$t_{\rm r}$	$V_{DD} = -10 \text{ V}, I_L = -1 \text{ A},$		9		nc	
Turn-Off Delay Time	$t_{d(off)}$	V_{GEN} = -4.5 V, R_G = 6 Ω		27		ns	
Fall-Time	t_{f}			11			

Notes

- a. Pulse test: PW <= 300us duty cycle <= 2%.
- b. Guaranteed by design, not subject to production testing.
- c. Repetitive rating, pulse width limited by junction temperature.

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-4.5V

Typical Electrical Characteristics

R_{DS(ON)} NORMALIZED DRAIN-SOURCE ON-RESISTANCE

1.2

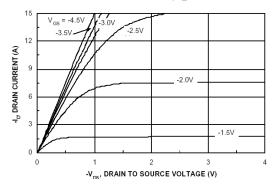
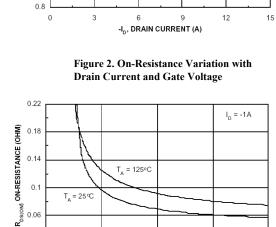


Figure 1. On-Region Characteristics



I_D = -2A R_{DS(ON)} NORMALIZED DRAIN-SOURCE ON-RESISTANCE 1.3 1.2 1.1 0.9 0.8 -50 -25 100 125 150 50 $T_{J'}$ JUNCTION TEMPERATURE (°C)

Figure 3. On-Resistance Variation with Temperature

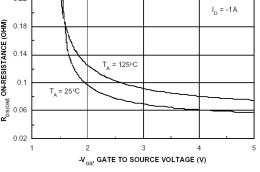
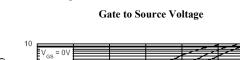


Figure 4. On-Resistance Variation with



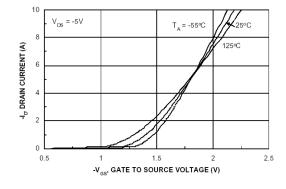


Figure 5. Transfer Characteristics

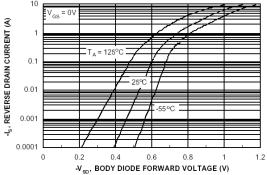


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature

Typical Electrical Characteristics

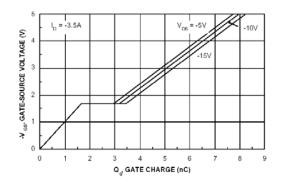


Figure 7. Gate Charge Characteristic

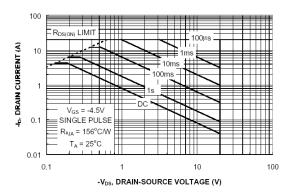


Figure 8. Capacitance Characteristic

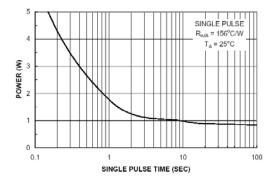


Figure 9. Maximum Safe Operating Area

Figure 10. Single Pulse Maximum Power
Dissipation



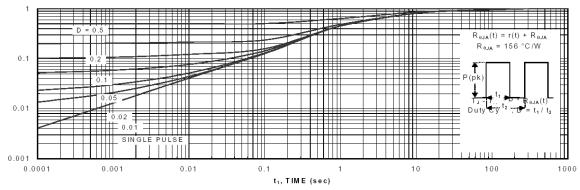
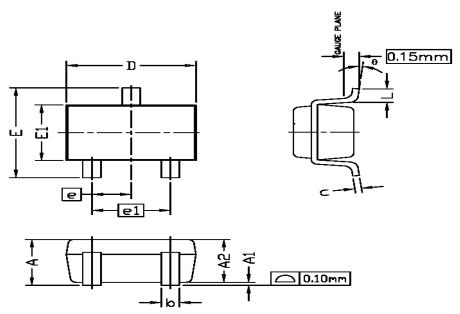


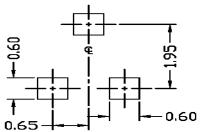
Figure 11. Transient Thermal Response Curve.

Package Information

SC70 PACKAGE OUTLINE



RECOMMENDED LAND PATTERN



IIN	TT:	mm

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIM	MI NI ENOIENE	CHES
SIMBULS	MIN	NOM	MAX	MIN	NOM	MAX
Α			1.10			0.043
A1	0.00		0.10	0.00		0.004
A2	0.7	0.9	1.00	0.028	0.035	0.039
ь	0.15		0.30	0.006		0.012
c	0.08		0.22	0.003		0.009
D	1.85	2.10	2,15	0.073	0.083	0.085
E	1.80	2.30	2.40	0.071	0.091	0.094
e	0.65 BSC			0.026 BSC		
el	1.30 BSC			0.051 BSC		
E 1	1.1	1.30	1.4	0.043	0.051	0.055
L	0.26	0.36	0.46	0.010	0.014	0.018
θ	0°	4°	80	0°	4°	80

NOTE

- 1. ALL DIMENSIONS ARE IN MILLMETERS.
- 2. DIMENSIONS ARE INCLUSIVE OF PLATING.
- 3. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
 MOLD FLASH AT THE NON-LEAD SIDES SHOULD BE LESS THAN 3 MILS EACH.
- DIE IS FACING UP FOR MOLD AND FACING DOWN FOR TRIM/FORM. ie: REVERSE TRIM/FORM.
- 5. DIMENSION L IS MEASURED IN GAUGE PLANE.
- 6. CONTROLLING DIMENSION IS MILLIMETER.

CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.