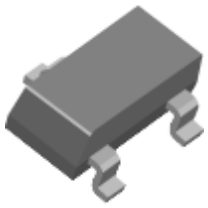
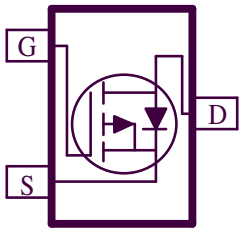
P-Channel 30-V (D-S) MOSFET

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.

PRODUCT SUMMARY		
V_{DS} (V)	$r_{DS(on)}$ (OHM)	I_D (A)
-30	0.112 @ V_{GS} = -10V	-1.5
	0.172 @ V_{GS} = -4.5V	-1.2

- Low $r_{DS(on)}$ provides higher efficiency and extends battery life
- 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		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	-1.5	A
	T_A=70°C		-1.2	
Pulsed Drain Current[b]		I_{DM}	-2.5	
Continuous Source Current (Diode Conduction)[a]		I_S	±0.28	A
Power Dissipation[a]	T_A=25°C	P_D	0.34	W
	T_A=70°C		0.22	
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}	375	°C/W
	Steady-State		430	

Notes

a. Surface Mounted on 1" x 1" FR4 Board.

b. Pulse width limited by maximum junction temperature

SPECIFICATIONS ($T_A = 25^oC$ 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			V
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0$ V, $V_{GS} = \pm 20$ 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, $T_J = 55^oC$			-10	
On-State Drain Current[A]	$I_{D(on)}$	$V_{DS} = -5$ V, $V_{GS} = -10$ V	-5			A
Drain-Source On-Resistance[A]	$r_{DS(on)}$	$V_{GS} = -10$ V, $I_D = -1.5$ A			112	mΩ
		$V_{GS} = -4.5$ V, $I_D = -1.2$ A			172	
Forward Tranconductance[A]	g_{fs}	$V_{DS} = -5$ V, $I_D = -1.5$ A		9		S
Diode Forward Voltage	V_{SD}	$I_S = -0.46$ A, $V_{GS} = 0$ V		-0.65		V
Dynamic[b]						
Total Gate Charge	Q_g	$V_{DS} = -10$ V, $V_{GS} = -5$ V, $I_D = -1.5$ A		7.2		nC
Gate-Source Charge	Q_{gs}			1.7		
Gate-Drain Charge	Q_{gd}			1.5		
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = -10$ V, $I_L = -1$ A, $V_{GEN} = -4.5$ V, $R_G = 6\Omega$		10		ns
Rise Time	t_r			9		
Turn-Off Delay Time	$t_{d(off)}$			27		
Fall-Time	t_f			11		

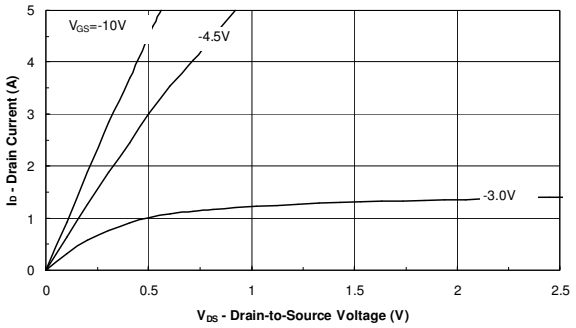
Notes

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

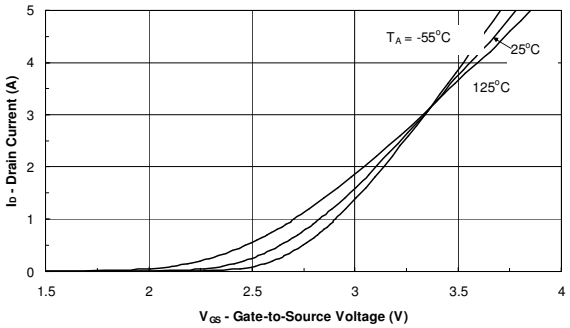
b. Guaranteed by design, not subject to production testing.

c. Repetitive rating, pulse width limited by junction temperature.

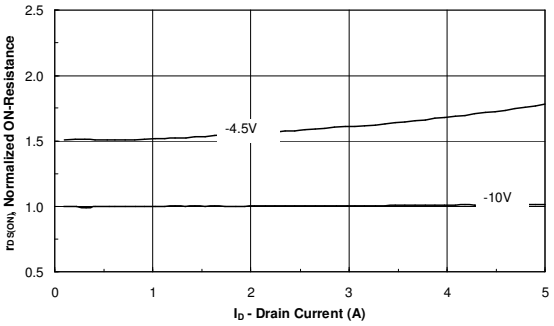
Typical Electrical Characteristics (P-Channel)



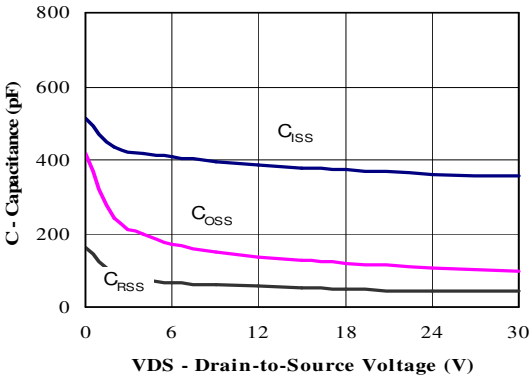
Output Characteristics



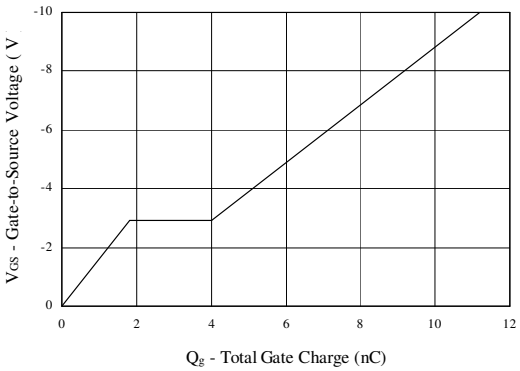
Transfer Characteristics



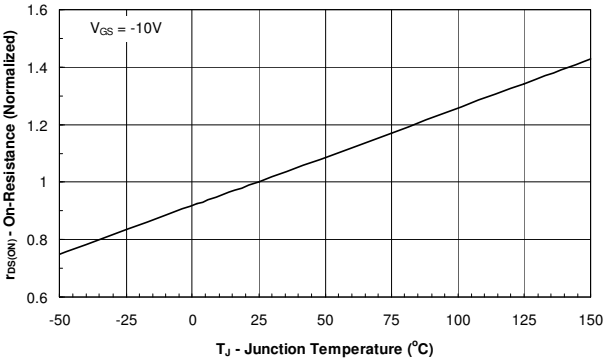
On-Resistance vs. Drain Current



Capacitance

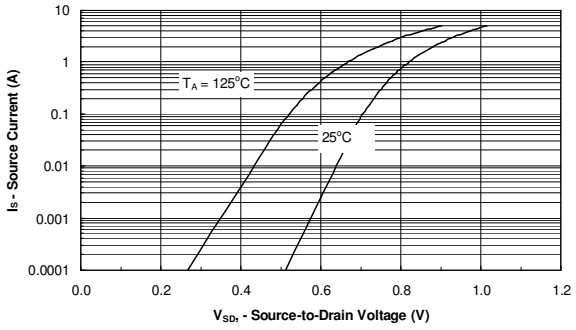


Gate Charge

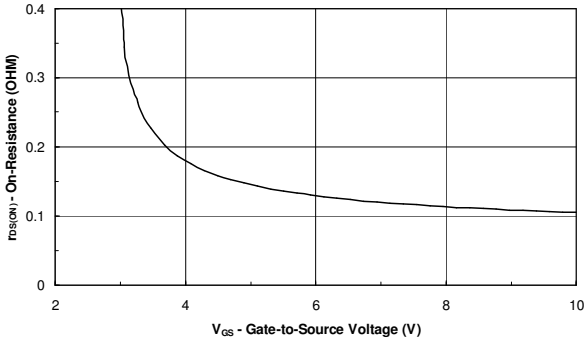


On-Resistance vs. Junction Temperature

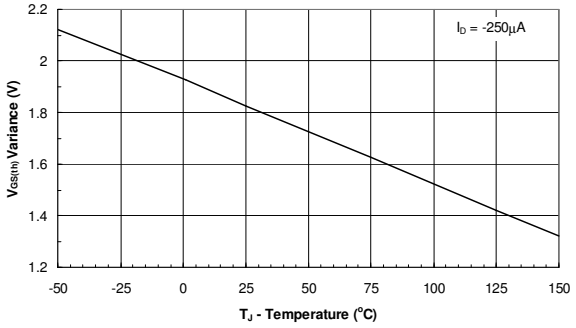
Typical Electrical Characteristics (P-Channel)

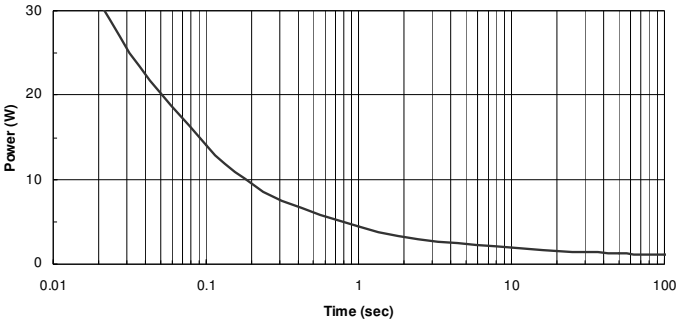


Source-Drain Diode Forward Voltage

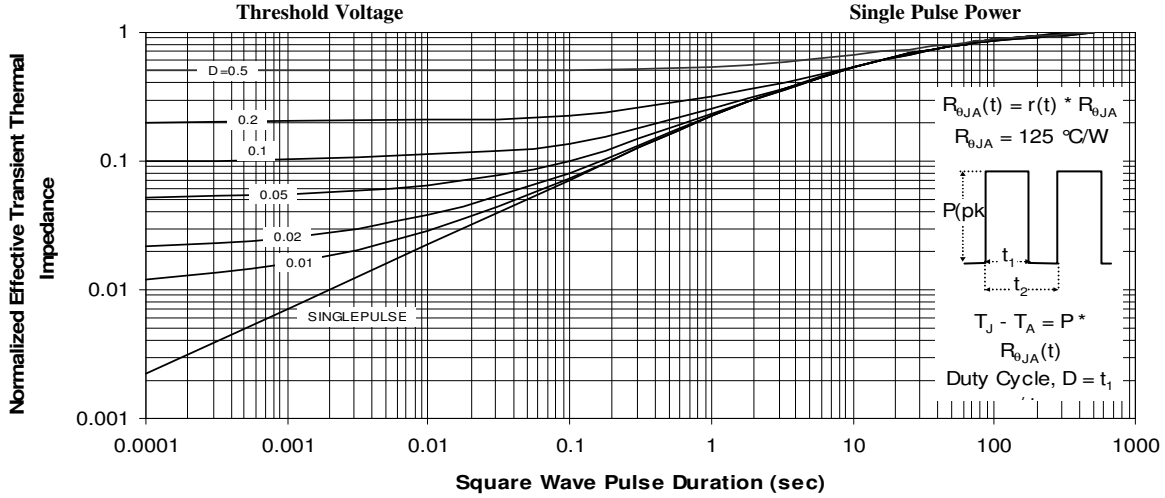


On-Resistance vs.Gate-to Source Voltage





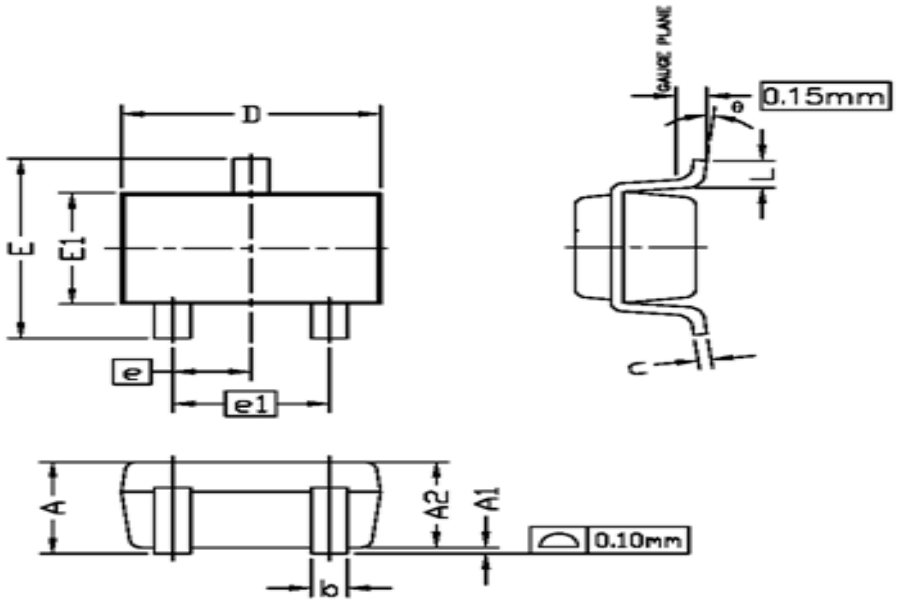
Threshold Voltage **Single Pulse Power**



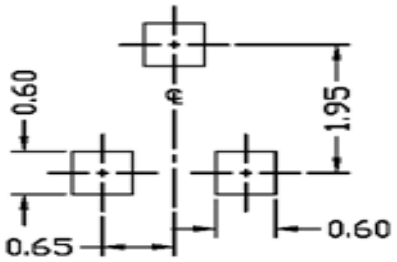
Normalized Thermal Transient Impedance, Junction-to-Ambient

Package Information

SC70 PACKAGE OUTLINE



RECOMMENDED LAND PATTERN



UNIT: mm

SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A		—	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
b	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		
e1	1.30 BSC			0.051 BSC		
E1	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°	8°	0°	4°	8°

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.
4. 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.