

# Small Signal MOSFET

## 310 mAmps, 60 Volts

### N-Channel SC-70

- Pb-Free Package is Available.

#### MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	$V_{DSS}$	60	V <sub>dc</sub>
Drain-Gate Voltage ( $R_{GS} = 1.0 \text{ M}\Omega$ )	$V_{DGR}$	60	V <sub>dc</sub>
Drain Current			
- Continuous $T_C = 25^\circ\text{C}$ (Note 1.)	$I_D$	310	mA <sub>dc</sub>
- Pulse $t < 10\mu\text{s}$	$I_{DM}$	1200	
Gate-Source Voltage			
- Continuous	$V_{GS}$	$\pm 20$	V <sub>dc</sub>
- Non-repetitive ( $t_p \leq 50 \mu\text{s}$ )	$V_{GSM}$	$\pm 40$	V <sub>pk</sub>

#### THERMAL CHARACTERISTICS

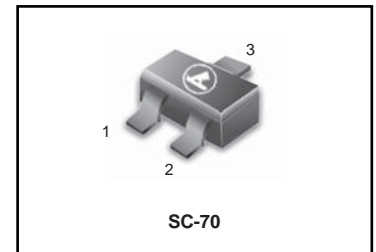
Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (Note 2.) $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	225 1.8	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	556	$^\circ\text{C}/\text{W}$
Total Device Dissipation Alumina Substrate, (Note 3.) $T_A = 25^\circ\text{C}$ Derate above $25^\circ\text{C}$	$P_D$	300 2.4	mW mW/ $^\circ\text{C}$
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	417	$^\circ\text{C}/\text{W}$
Junction and Storage Temperature	$T_J, T_{stg}$	-55 to +150	$^\circ\text{C}$

- The Power Dissipation of the package may result in a lower continuous drain current.
- FR-5 = 1.0 x 0.75 x 0.062 in.
- Alumina = 0.4 x 0.3 x 0.025 in 99.5% alumina.

#### ORDERING INFORMATION

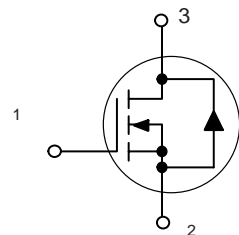
Device	Marking	Shipping
L2SK801WT1G	81	3000 Tape & Reel
L2SK801WT3G	81	10000 Tape & Reel

**L2SK801WT1G**

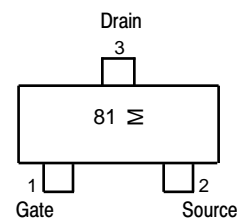


**310 mAmps**  
**60 VOLTS**  
 $R_{DS(on)} = 1.5 \Omega$   
 $V_{GS(th)} = 1.8 \text{ V}$

N - Channel



#### MARKING DIAGRAM & PIN ASSIGNMENT



81 = Device Code  
M = Month Code

**L2SK801WT1G**
**ELECTRICAL CHARACTERISTICS** ( $T_A = 25^\circ\text{C}$  unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
<b>OFF CHARACTERISTICS</b>					
Drain–Source Breakdown Voltage ( $V_{GS} = 0, I_D = 10 \mu\text{A}$ )	$V_{(BR)DSS}$	60	–	–	Vdc
Zero Gate Voltage Drain Current ( $V_{GS} = 0, V_{DS} = 60 \text{ Vdc}$ )	$I_{DSS}$	– –	– –	1.0 500	$\mu\text{A}$
Gate–Body Leakage Current, Forward ( $V_{GS} = 20 \text{ Vdc}$ )	$I_{GSSF}$	–	–	100	nA
Gate–Body Leakage Current, Reverse ( $V_{GS} = -20 \text{ Vdc}$ )	$I_{GSSR}$	–	–	-100	nA

**ON CHARACTERISTICS** (Note 2.)

Gate Threshold Voltage ( $V_{DS} = V_{GS}, I_D = 250 \mu\text{A}$ )	$V_{GS(th)}$	1.0	1.8	2.2	Vdc
On–State Drain Current ( $V_{DS} \geq 2.0 V_{DS(on)}, V_{GS} = 10 \text{ Vdc}$ )	$I_{D(on)}$	500	–	–	mA
Static Drain–Source On–State Voltage ( $V_{GS} = 10 \text{ Vdc}, I_D = 500 \text{ mA}$ ) ( $V_{GS} = 5.0 \text{ Vdc}, I_D = 50 \text{ mA}$ )	$V_{DS(on)}$	– –	– –	3.75 0.375	Vdc
Static Drain–Source On–State Resistance ( $V_{GS} = 10 \text{ V}, I_D = 500 \text{ mA}$ )  ( $V_{GS} = 5.0 \text{ Vdc}, I_D = 50 \text{ mA}$ )	$r_{DS(on)}$	– –	1.5 1.7	2.5 2.5	Ohms
Forward Transconductance ( $V_{DS} \geq 2.0 V_{DS(on)}, I_D = 200 \text{ mA}$ )	$g_{FS}$	80	–	–	mmhos

**DYNAMIC CHARACTERISTICS**

Input Capacitance ( $V_{DS} = 25 \text{ Vdc}, V_{GS} = 0, f = 1.0 \text{ MHz}$ )	$C_{iss}$	–	17	50	pF
Output Capacitance ( $V_{DS} = 25 \text{ Vdc}, V_{GS} = 0, f = 1.0 \text{ MHz}$ )	$C_{oss}$	–	10	25	pF
Reverse Transfer Capacitance ( $V_{DS} = 25 \text{ Vdc}, V_{GS} = 0, f = 1.0 \text{ MHz}$ )	$C_{rss}$	–	2.5	5.0	pF

**SWITCHING CHARACTERISTICS** (Note 2.)

Turn–On Delay Time	( $V_{DD} = 25 \text{ Vdc}, I_D \cong 500 \text{ mA},$ $R_G = 25 \Omega, R_L = 50 \Omega, V_{gen} = 10 \text{ V}$ )	$t_{d(on)}$	–	7	20	ns
Turn–Off Delay Time		$t_{d(off)}$	–	11	40	ns

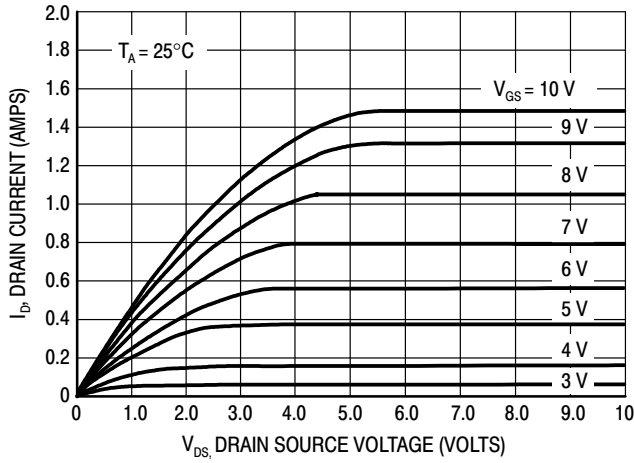
**BODY–DRAIN DIODE RATINGS**

Diode Forward On–Voltage ( $I_S = 115 \text{ mA}, V_{GS} = 0 \text{ V}$ )	$V_{SD}$	–	–	-1.5	Vdc
Source Current Continuous (Body Diode)	$I_S$	–	–	-115	mA
Source Current Pulsed	$I_{SM}$	–	–	-800	mA

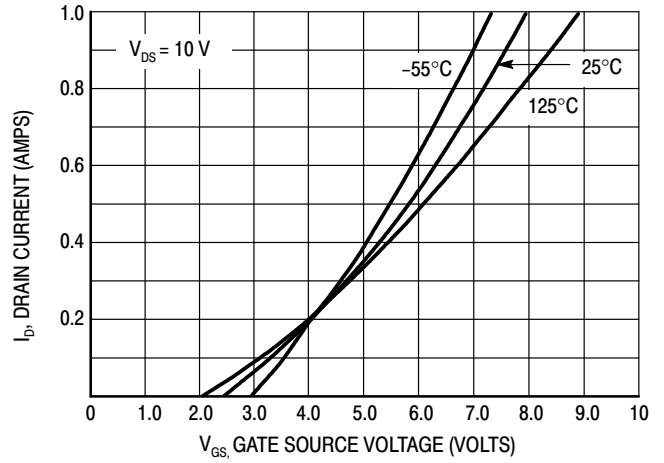
 2. Pulse Test: Pulse Width  $\leq 300 \mu\text{s}$ , Duty Cycle  $\leq 2.0\%$ .

**L2SK801WT1G**

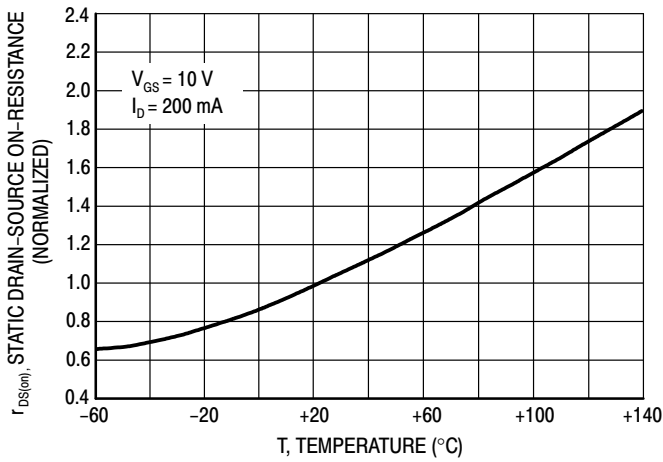
**TYPICAL ELECTRICAL CHARACTERISTICS**



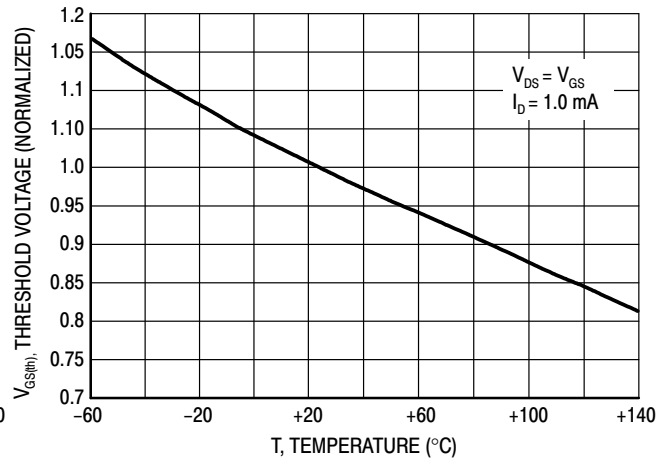
**Figure 1. Ohmic Region**



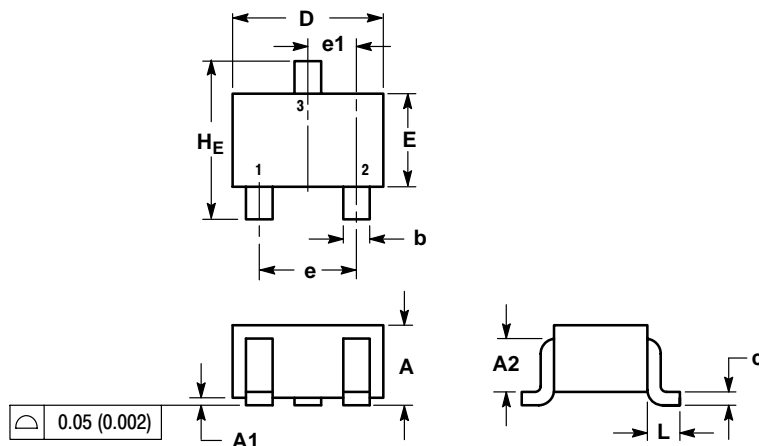
**Figure 2. Transfer Characteristics**



**Figure 3. Temperature versus Static Drain-Source On-Resistance**

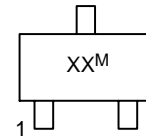


**Figure 4. Temperature versus Gate Threshold Voltage**

**L2SK801WT1G**
**SC-70**

**NOTES:**

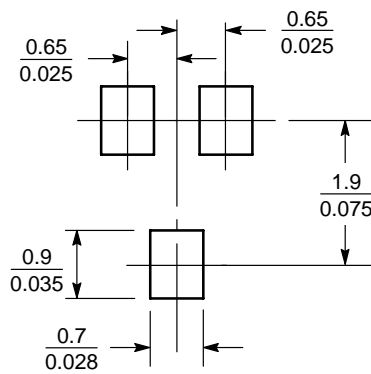
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.80	0.90	1.00	0.032	0.035	0.040
A1	0.00	0.05	0.10	0.000	0.002	0.004
A2	0.7 REF			0.028 REF		
b	0.30	0.35	0.40	0.012	0.014	0.016
c	0.10	0.18	0.25	0.004	0.007	0.010
D	1.80	2.10	2.20	0.071	0.083	0.087
E	1.15	1.24	1.35	0.045	0.049	0.053
e	1.20	1.30	1.40	0.047	0.051	0.055
e1	0.65 BSC			0.026 BSC		
L	0.425 REF			0.017 REF		
H <sub>E</sub>	2.00	2.10	2.40	0.079	0.083	0.095

**GENERIC MARKING DIAGRAM**


- XX = Specific Device Code
- M = Date Code
- = Pb-Free Package

\*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "▪", may or may not be present.

**SOLDERING FOOTPRINT\***


SCALE 10:1 (mm/inches)