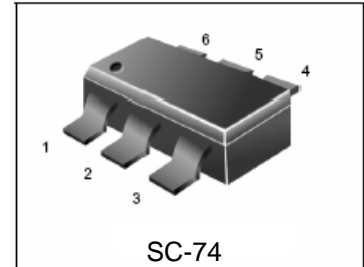


Small Signal MOSFET

115 mAmps, 60 Volts

N-Channel SC-74

L2N7002DMT1G
S-L2N7002DMT1G



- We declare that the material of product compliance with RoHS requirements.
- ESD Protected:1000V
- S- Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable.

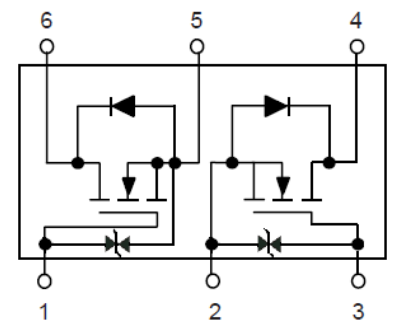
MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Drain-Source Voltage	V_{DSS}	60	V _{dc}
Drain-Gate Voltage ($R_{GS} = 1.0 \text{ M}\Omega$)	V_{DGR}	60	V _{dc}
Drain Current - Continuous $T_C = 25^\circ\text{C}$ (Note 1.) $T_C = 100^\circ\text{C}$ (Note 1.) - Pulsed (Note 2.)	I_D I_{DM}	± 115 ± 75 ± 800	mA _{dc}
Gate-Source Voltage - Continuous - Non-repetitive ($t_p \leq 50 \mu\text{s}$)	V_{GS} V_{GSM}	± 20 ± 40	V _{dc} V _{pk}

115 mAmps
60 VOLTS

$R_{DS(on)} = 7.5 \Omega$

N - Channel



THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board (Note 3.) $T_A = 25^\circ\text{C}$ Derate above 25°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 4.) $T_A = 25^\circ\text{C}$ Derate above 25°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	$^\circ\text{C}$

1. The Power Dissipation of the package may result in a lower continuous drain current.
2. Pulse Test: Pulse Width $\leq 300 \mu\text{s}$, Duty Cycle $\leq 2.0\%$.
3. FR-5 = $1.0 \times 0.75 \times 0.062$ in.
4. Alumina = $0.4 \times 0.3 \times 0.025$ in 99.5% alumina.

ORDERING INFORMATION

Device	Marking	Shipping
L2N7002DMT1G S-L2N7002DMT1G	72D	3000 Tape & Reel
L2N7002DMT3G S-L2N7002DMT3G	72D	10000 Tape & Reel

L2N7002DMT1G , S-L2N7002DMT1G

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

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Drain–Source Breakdown Voltage ($V_{GS} = 0, I_D = 250\mu\text{A}$)	$V_{(BR)DSS}$	60	–	–	Vdc
Zero Gate Voltage Drain Current ($V_{GS} = 0, V_{DS} = 60\text{ Vdc}$)	I_{DSS}	–	–	1.0	μA
		–	–	500	
Gate–Body Leakage Current, Forward ($V_{GS} = 20\text{ Vdc}$)	I_{GSSF}	–	–	1.0	μA
Gate–Body Leakage Current, Reverse ($V_{GS} = -20\text{ Vdc}$)	I_{GSSR}	–	–	-1.0	μA

ON CHARACTERISTICS (Note 2.)

Gate Threshold Voltage ($V_{DS} = V_{GS}, I_D = 250\mu\text{A}$)	$V_{GS(th)}$	1.0	1.6	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 ($V_{GS} = 10\text{ V}, I_D = 500\text{ mA}$) $T_C = 25^\circ\text{C}$ $T_C = 125^\circ\text{C}$ ($V_{GS} = 5.0\text{ Vdc}, I_D = 50\text{ mA}$) $T_C = 25^\circ\text{C}$ $T_C = 125^\circ\text{C}$	$r_{DS(on)}$	–	1.4 – 1.8 –	7.5 13.5 7.5 13.5	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 $\leq 2.0\%$.

TYPICAL ELECTRICAL CHARACTERISTICS

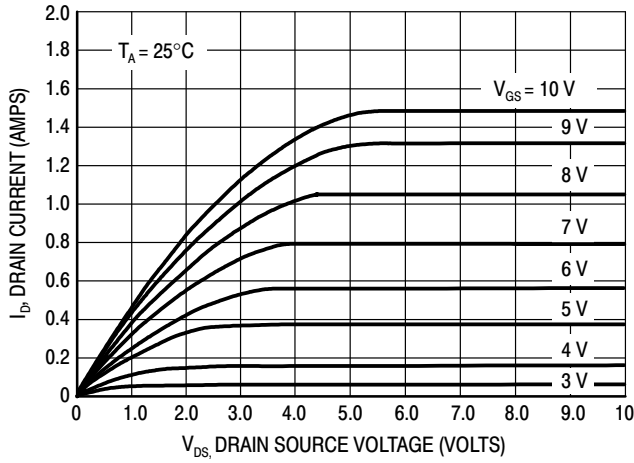


Figure 1. Ohmic Region

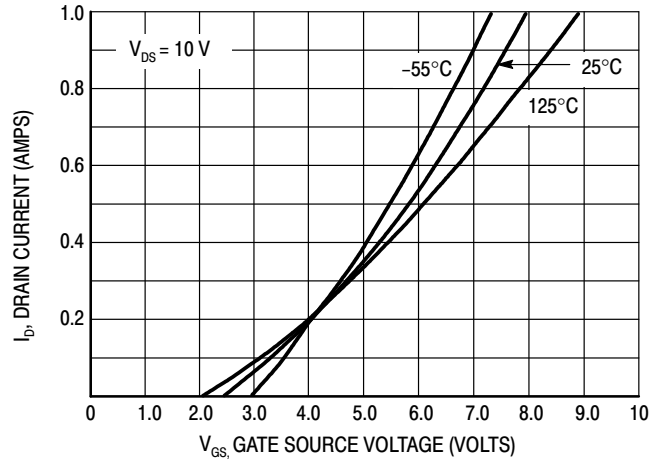


Figure 2. Transfer Characteristics

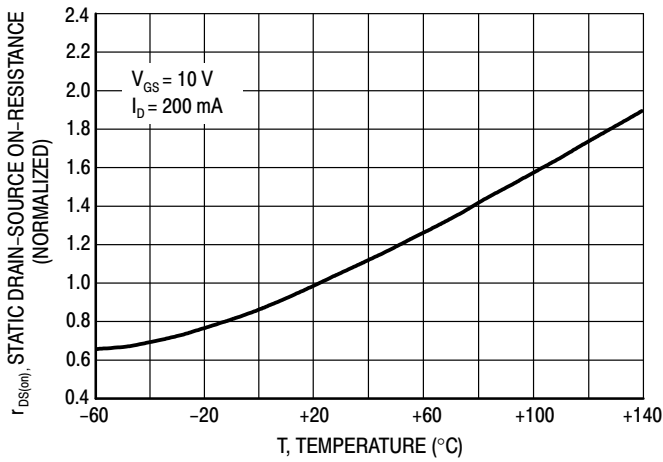


Figure 3. Temperature versus Static Drain-Source On-Resistance

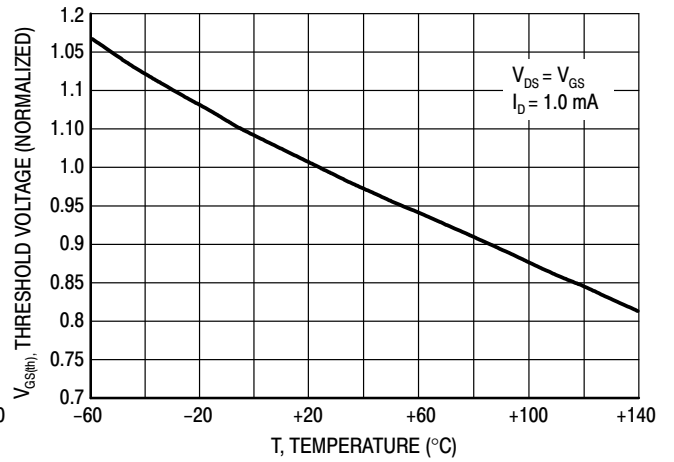
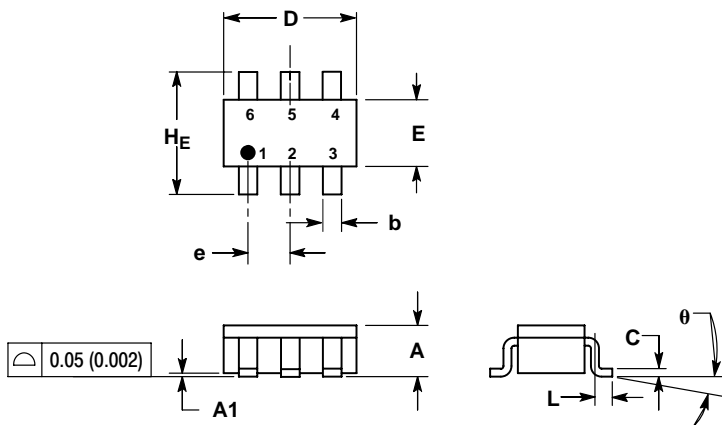


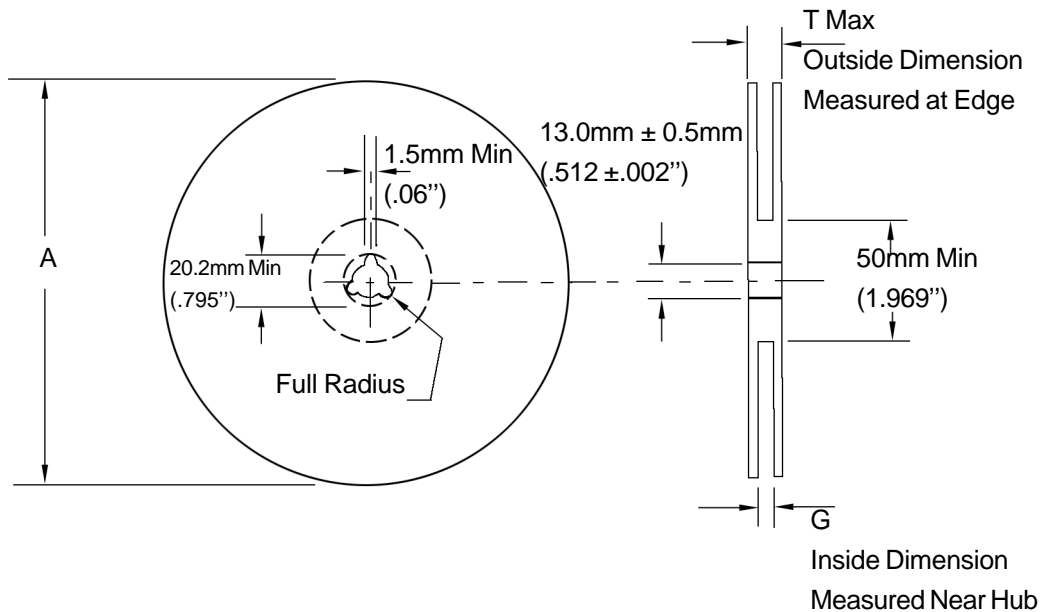
Figure 4. Temperature versus Gate Threshold Voltage

SC-74



DIM	MILLIMETERS			INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	0.90	1.00	1.10	0.035	0.039	0.043
A1	0.01	0.06	0.10	0.001	0.002	0.004
b	0.25	0.37	0.50	0.010	0.015	0.020
c	0.10	0.18	0.26	0.004	0.007	0.010
D	2.90	3.00	3.10	0.114	0.118	0.122
E	1.30	1.50	1.70	0.051	0.059	0.067
e	0.85	0.95	1.05	0.034	0.037	0.041
L	0.20	0.40	0.60	0.008	0.016	0.024
HE	2.50	2.75	3.00	0.099	0.108	0.118
θ	0°	-	10°	0°	-	10°

EMBOSSED TAPE AND REEL DATA FOR DISCRETES



Size	A Max	G	T Max
8 mm	178.0mm (7.0")	8.4mm+1.5mm, -0.0 (.33"+.039", -0.00)	10.9mm (.43")

Reel Dimensions

Metric Dimensions Govern — English are in parentheses for reference only

Storage Conditions

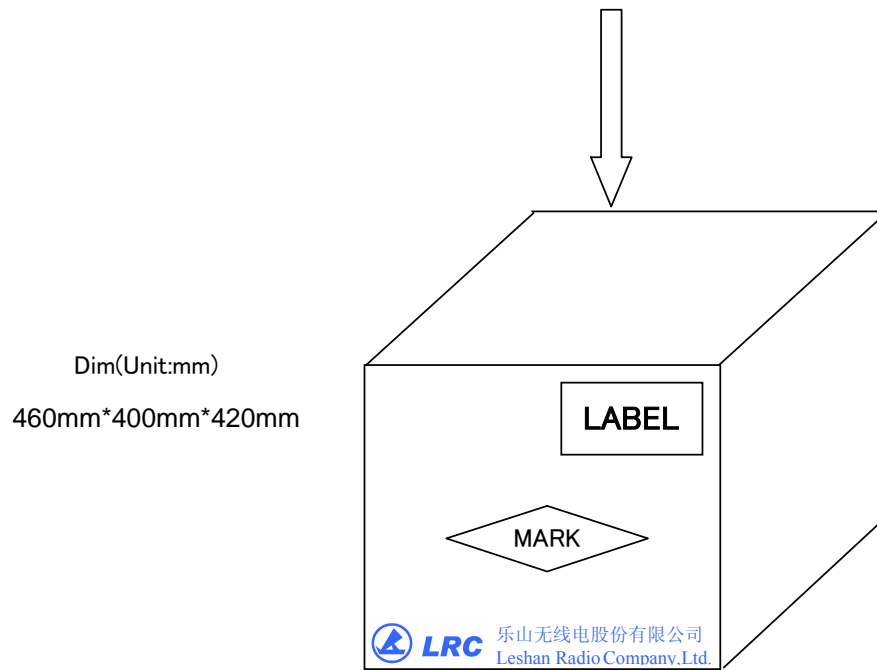
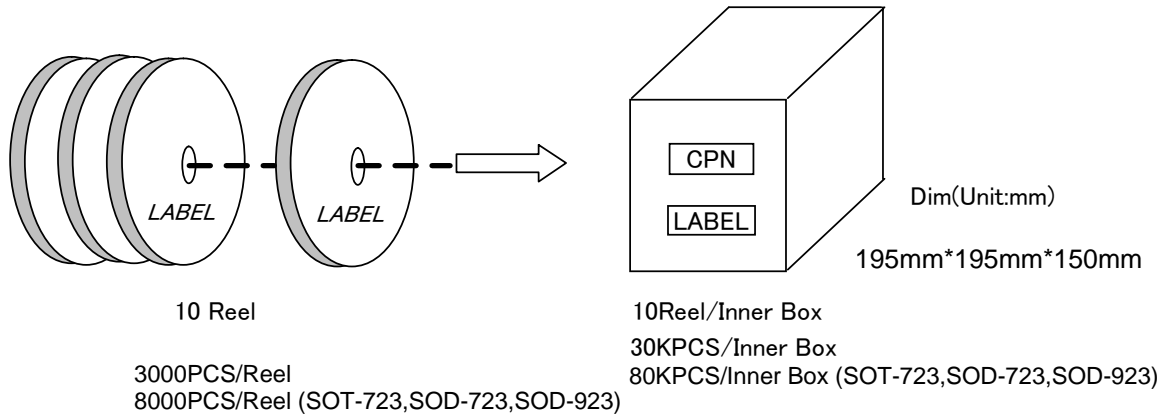
Temperature: 5 to 40 Deg.C (20 to 30 Deg. C is preferred)

Humidity: 30 to 80 RH (40 to 60 is preferred)

Recommended Period: One year after manufacturing

(This recommended period is for the soldering condition only. The characteristics and reliabilities of the products are not restricted to this limitation)

Shipment Specification



12 Inner Box/Carton

360KPCS/Carton
960KPCS/Carton (SOT-723,SOD-723,SOD-923)