

Small Signal MOSFET

Silicon N-Channel

●Features

- 1) Low on-resistance.
- 2) Fast switching speed.
- 3) Low-voltage drive.
- 4) Easily designed drive circuits.
- 5) Easy to parallel.
- 6) Pb-Free package is available.

●Device Marking and Ordering Information

Device	Marking	Shipping
LRK7002WT1G	6C	3000/Tape&Reel
LRK7002WT3G	6C	10000/Tape&Reel

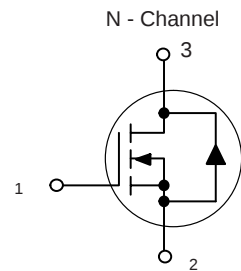
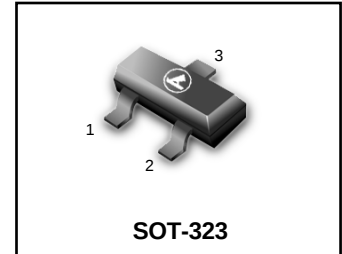
●Absolute maximum ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-source voltage	V_{DS}	60	V
Gate-source voltage	V_{GS}	± 20	V
Drain current	Continuous	I_D	115 mA
	Pulsed	I_{DP}^{*1}	0.8 A
Drain reverse current	Continuous	I_{DR}	115 mA
	Pulsed	I_{DRP}^{*1}	0.8 A
Total power dissipation	P_D^{*2}	225	mW
Channel temperature	T_{ch}	150	°C
Storage temperature	T_{stg}	-55~+150	°C

*1 $P_w \leq 10\mu s$, Duty cycle $\leq 1\%$

*2 When mounted on a 1×0.75×0.062 inch glass epoxy board.

LRK7002WT1G



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●Electrical characteristics (Ta=25°C)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Gate-source leakage current	I_{GSS}	—	—	± 10	μA	$V_{GS}=\pm 20V, V_{DS}=0V$
Drain-source breakdown voltage	$V_{(BR)DSS}$	60	—	—	V	$I_D=10\mu A, V_{GS}=0V$
Zero gate voltage drain current	I_{DSS}	—	—	1	μA	$V_{DS}=60V, V_{GS}=0V$
Gate threshold voltage	$V_{GS(th)}$	1	1.85	2.5	V	$V_{DS}=V_{GS}, I_D=250\mu A$
Drain-source on-state resistance	$R_{DS(on)}^*$	—	—	7.5	Ω	$I_D=0.5A, V_{GS}=10V$
		—	—	7.5		$I_D=0.05A, V_{GS}=5V$
Forward transfer admittance	$ Y_{fs} ^*$	80	—	—	mS	$V_{DS}=10V, I_D=0.2A$
Input capacitance	C_{iss}	—	25	50	pF	$V_{DS}=25V$ $V_{GS}=0V$ $f=1MHz$
Output capacitance	C_{oss}	—	10	25	pF	
Reverse transfer capacitance	C_{rss}	—	3.0	5.0	pF	
Turn-on delay time	$t_{d(on)}^*$	—	12	20	ns	$I_D=200mA, V_{DD}=30V$
Turn-off delay time	$t_{d(off)}^*$	—	20	30	ns	$V_{GS}=10V, R_L=150\Omega, R_{GS}=10\Omega$

* $P_w \leq 300\mu s$, Duty cycle $\leq 1\%$

●Electrical characteristic curves

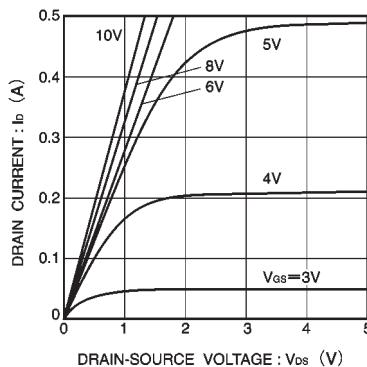


Fig.1 Typical output characteristics

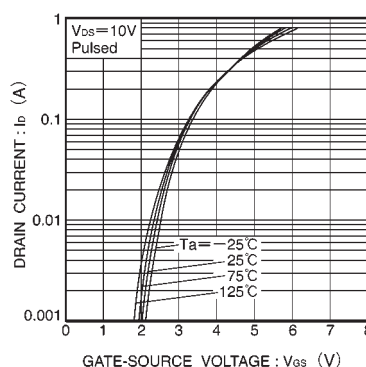


Fig.2 Typical transfer characteristics

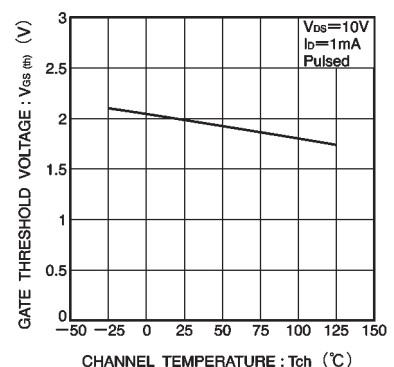


Fig.3 Gate threshold voltage vs. channel temperature

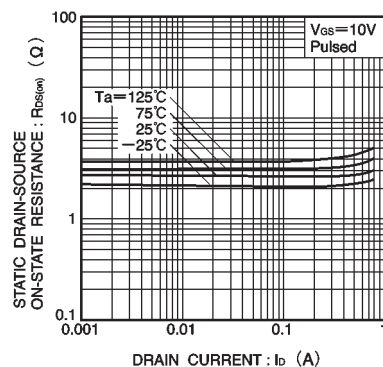


Fig.4 Static drain-source on-state resistance vs. drain current (I)

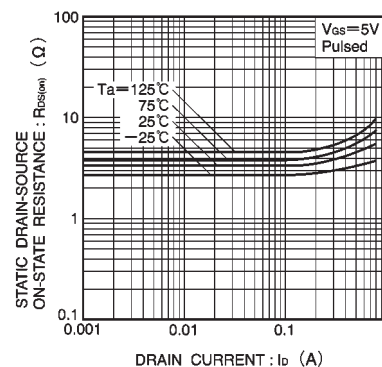


Fig.5 Static drain-source on-state resistance vs. drain current (II)

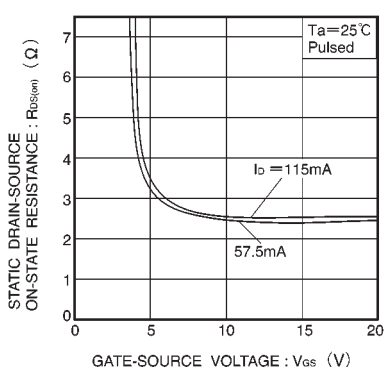


Fig.6 Static drain-source on-state resistance vs. gate-source voltage

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●Electrical characteristic curves (continues)

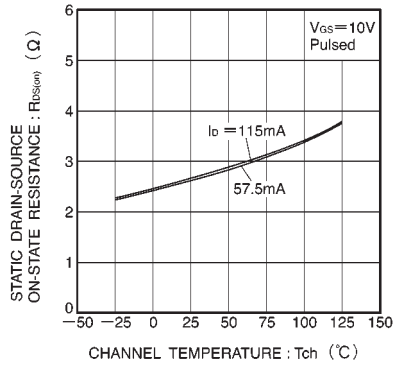


Fig.7 Static drain-source on-state resistance vs. channel temperature

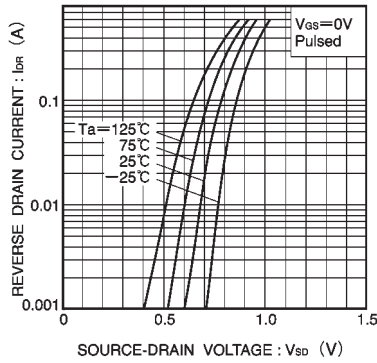


Fig.8 Reverse drain current vs. source-drain voltage (I)

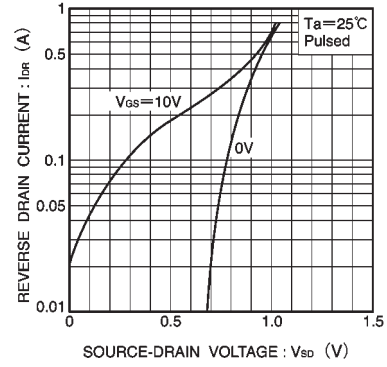


Fig.9 Reverse drain current vs. source-drain voltage (II)

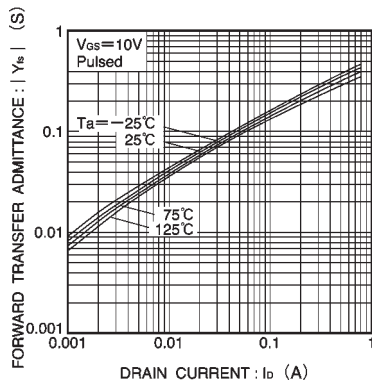


Fig.10 Forward transfer admittance vs. drain current

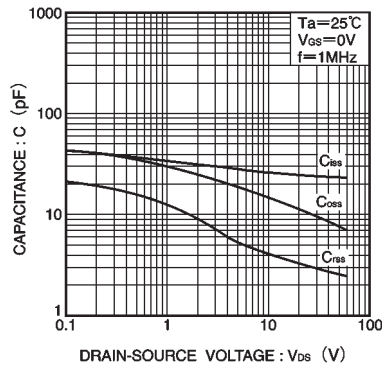


Fig.11 Typical capacitance vs. drain-source voltage

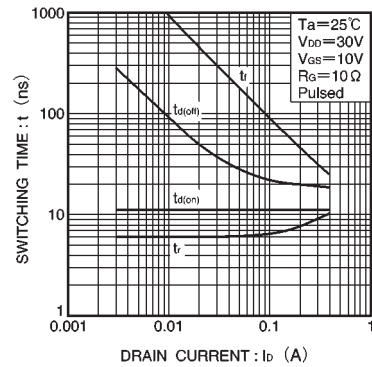


Fig.12 Switching characteristics
(See Figures 13 and 14 for the measurement circuit and resultant waveforms)

●Switching characteristics measurement circuit

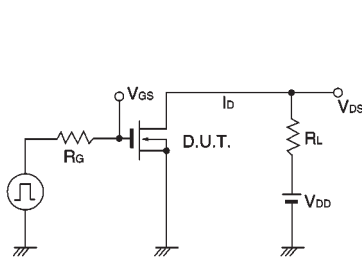


Fig.13 Switching time measurement circuit

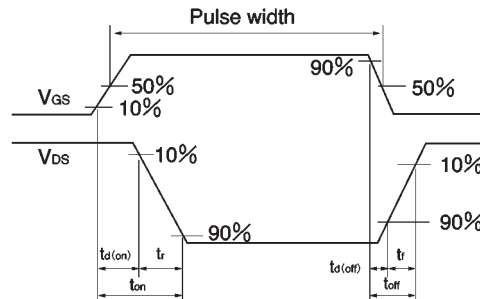
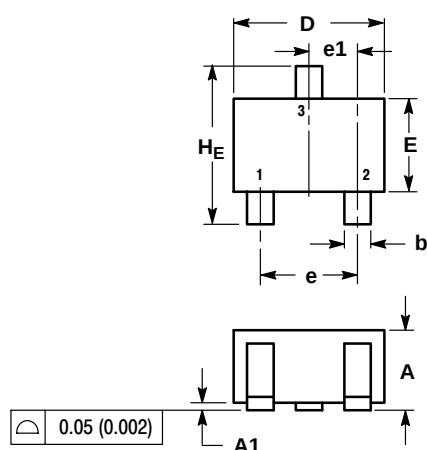


Fig.14 Switching time waveforms

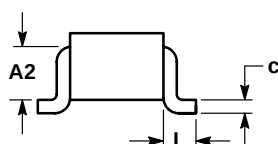
LRK7002WT1G

SC-70 (SOT-323)

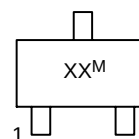


NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

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		
HE	2.00	2.10	2.40	0.079	0.083	0.095

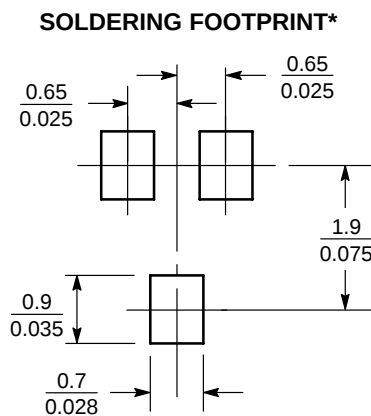


GENERIC MARKING DIAGRAM



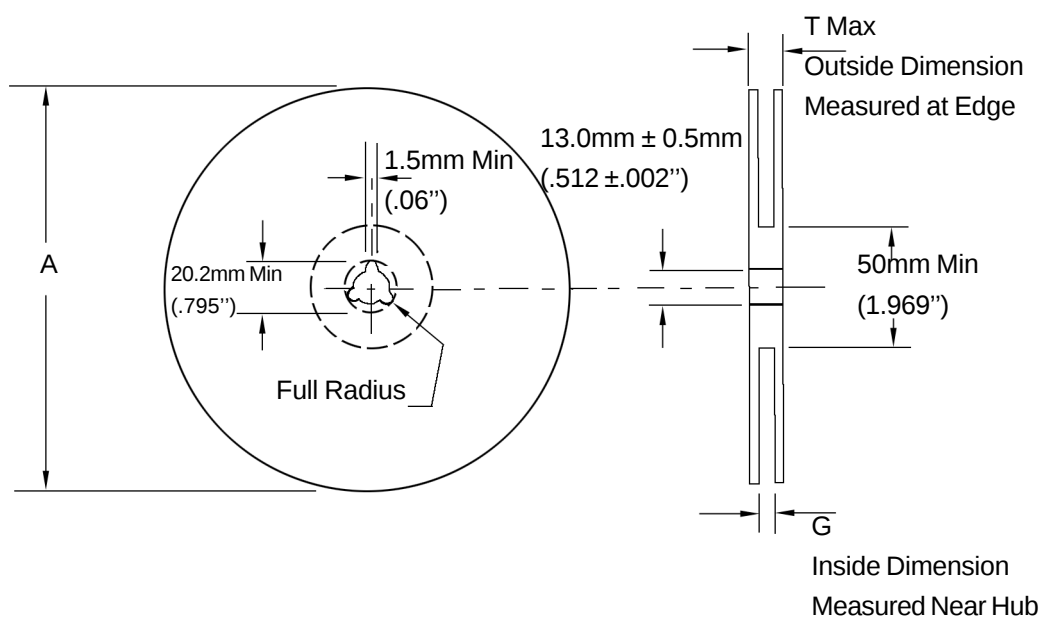
XX = Specific Device Code
M = Date Code
▪ = Pb-Free Package

*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.



SCALE 10:1 (mm/inches)

EMBOSSED TAPE AND REEL DATA FOR DISCRETES



Size	A Max	G	T Max
8 mm	330mm (12.992")	8.4mm+1.5mm, -0.0 (.33"+.059", -0.00)	14.4mm (.56")
12mm	330mm (12.992")	12.4mm+2.0mm, -0.0 (.49 "+.079", -0.00)	18.4mm (.72")
16mm	360mm (14.173")	16.4mm+2.0mm, -0.0 (.646"+.078", -0.00)	22.4mm (.882")
24 mm	360mm (14.173")	24.4mm+2.0mm, -0.0 (.961"+.070", -0.00)	30.4mm (1.197")

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

