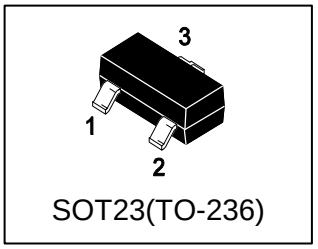
L2N7002KLT1G
S-L2N7002KLT1G

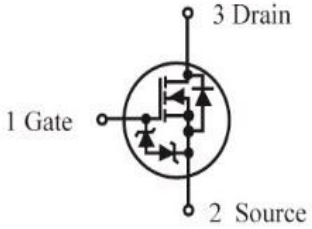
Small Signal MOSFET
380 mAmps, 60 Volts N–Channel SOT-23



SOT23(TO-236)

1. FEATURES

- We declare that the material of product compliance with RoHS requirements and Halogen Free.
- S- prefix for automotive and other applications requiring unique site and control change requirements; AEC-Q101 qualified and PPAP capable.
- ESD Protected



2. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
L2N7002KLT1G	RK	3000/Tape&Reel
L2N7002KLT3G	RK	10000/Tape&Reel

3. MAXIMUM RATINGS(Ta = 25ºC)

Parameter	Symbol	Limits	Unit
Drain–Source Voltage	VDSS	60	Vdc
Gate-Source Voltage	VGS	±20	Vdc
Drain Current	ID		mAdc
– Steady State TA = 25°C		320	
TA = 85°C		230	
– t<5s TA = 25°C		380	
TA = 85°C		270	
Pulsed Drain Current (tp=10μs)	IDM	1.5	A
Source Current (Body Diode)	IS	300	mA

4. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Total Device Dissipation(Note 1)	PD		mW
– Steady State		300	
– t<5s		420	
Junction−to−Ambient(Note 1)	RΘJA		ºC/W
– Steady State		417	
– t<5s		300	
Lead Temperature for Soldering Purposes (1/8 " from case for 10 s)	TL	260	° C
Junction and Storage temperature	TJ,Tstg	−55~+150	° C
Gate−Source ESD Rating(HBM, Method 3015)	ESD	2000	V

1. FR–5 = 1.0×0.75×0.062 in.

5. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

OFF CHARACTERISTICS

Characteristic		Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = 250μAdc)		VBRDSS	60	-	-	Vdc
Drain−to−Source Breakdown Voltage Temperature Coefficient		VBRDSS/TJ	-	71	-	mV/° C
Zero Gate Voltage Drain Current	TJ = 25°C	IDSS	-	-	1.0	μAdc
(VGS = 0, VDS = 60 Vdc)	TJ = 125°C				500	
(VGS = 0, VDS = 50 Vdc)	TJ = 25°C		-	-	100	nAdc
Gate–Body Leakage Current, Forward (VGS = 20 Vdc)		IGSSF	-	-	10	μAdc
Gate–Body Leakage Current, Reverse (VGS = - 20 Vdc)		IGSSR	-	-	-10	μAdc

ON CHARACTERISTICS (Note 2)

	Symbol	Min.	Typ.	Max.	Unit
Gate Threshold Voltage (VDS = VGS, ID = 250μAdc)	VGS(th)	1.0	-	2.5	Vdc
Negative Threshold Temperature Coefficient	VGS(TH)/TJ	-	4	-	mV/° C
Static Drain–Source On–State Resistance	RDS(on)				Ohm
(VGS = 10 Vdc, ID = 500 mAdc)		-	-	2.3	
(VGS = 5.0 Vdc, ID = 50 mAdc)		-	-	2.7	
Forward Transconductance (VDS = 5.0 Vdc, ID = 200 mAdc)	gfs	80	-	-	mS

DYNAMIC CHARACTERISTICS

	Symbol	Min.	Typ.	Max.	Unit
Total Gate Charge (VDS =10V, VGS =4.5V, ID =0.5A)	Qg	-	360	-	pC
Gate-Source Charge (VDS =10V, VGS =4.5V, ID =0.5A)	Qgs	-	90	-	
Gate-Drain Charge (VDS =10V, VGS =4.5V, ID =0.5A)	Qgd	-	210	-	
Input Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz)	Ciss	-	34	-	pF
Output Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz)	Coss	-	3	-	pF
Reverse Transfer Capacitance (VDS = 25 Vdc, VGS = 0, f = 1.0 MHz)	Crss	-	2.2	-	pF

SWITCHING CHARACTERISTICS

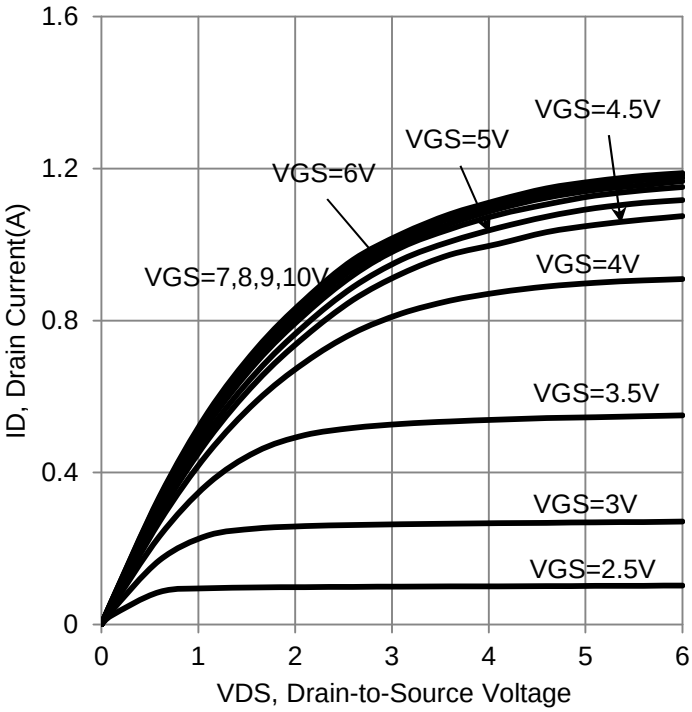
		Symbol	Min.	Typ.	Max.	Unit
Turn-On Delay Time	VDS = 10 V, VGEN = 10 V, ID = 500 mA	td(on)	-	3.8	-	ns
Rise Time		tr	-	3.4	-	
Turn-Off Delay Time		td(off)	-	19	-	
Fall Time		tf	-	12	-	

BODY–DRAIN DIODE RATINGS

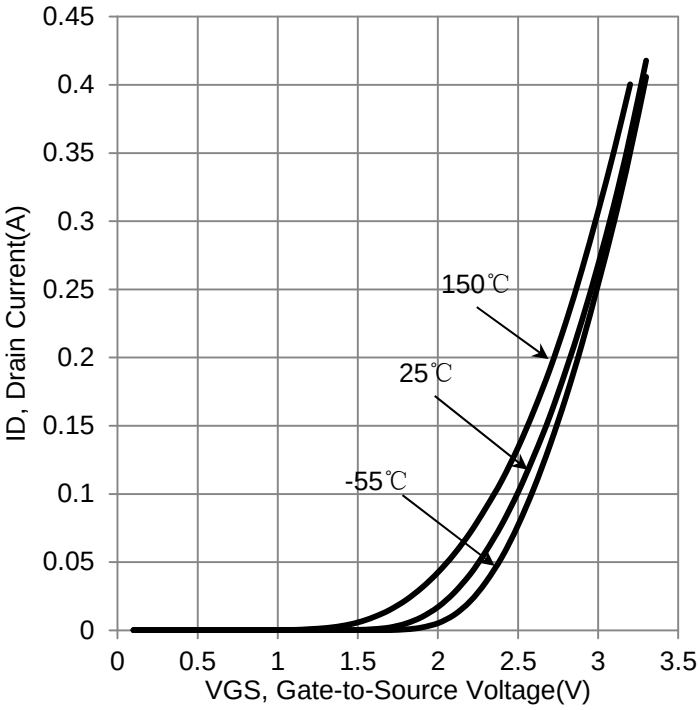
		Symbol	Min.	Typ.	Max.	Unit
Diode Forward On–Voltage	TJ = 25°C	VSD	-	-	1.4	Vdc
(IS = 115 mAdc, VGS = 0 V)	TJ = 85°C		-	0.7	-	

2.Pulse Test: Pulse Width ≤300 μs, Duty Cycle ≤2.0%.

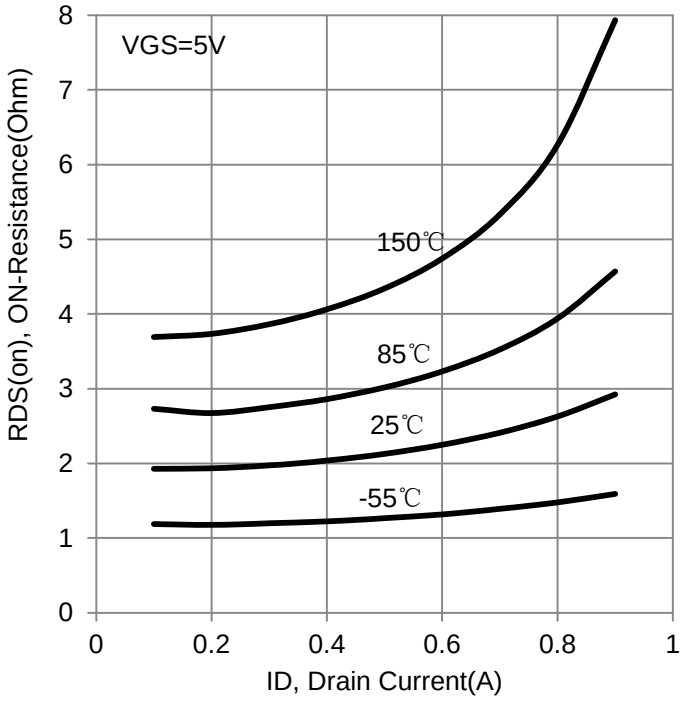
6. ELECTRICAL CHARACTERISTICS CURVES



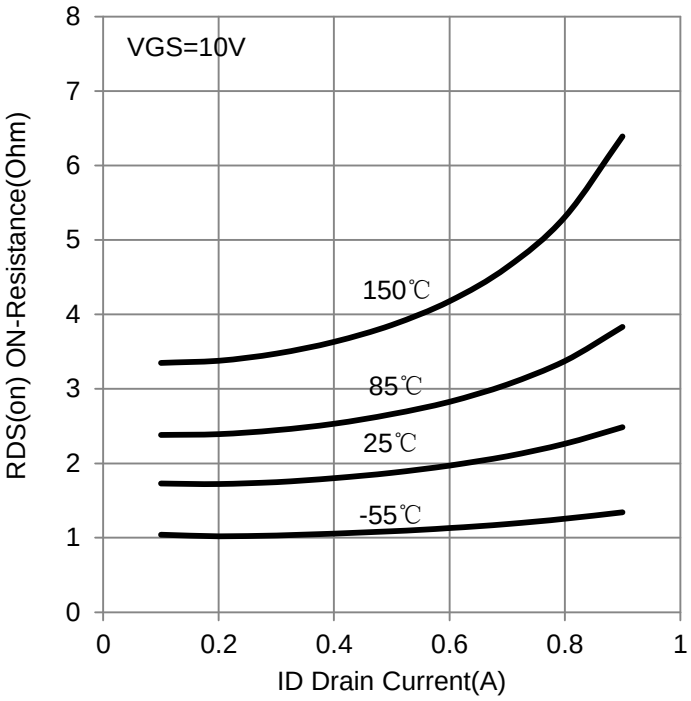
On-Region Characteristics



Transfer Characteristics

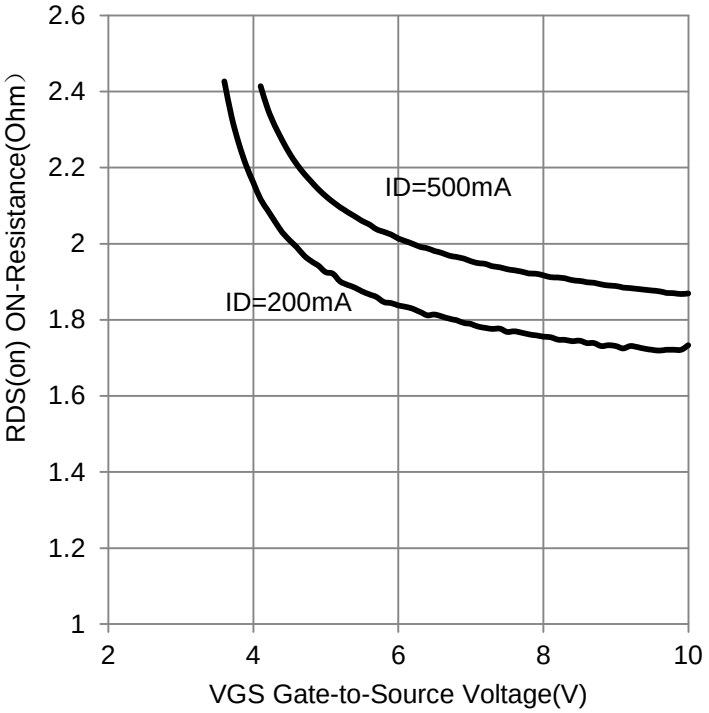


RDS(on) vs. ID

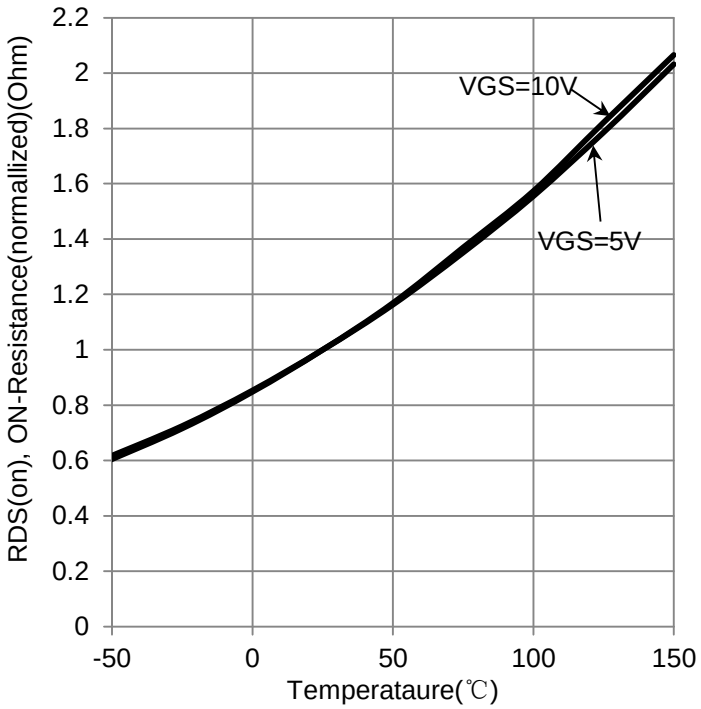


RDS(on) vs. ID

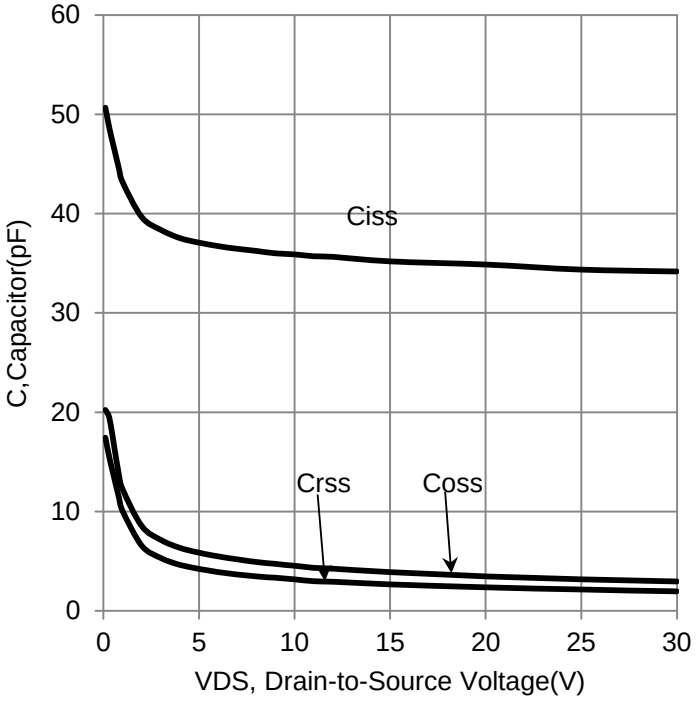
6. ELECTRICAL CHARACTERISTICS CURVES（Con.)



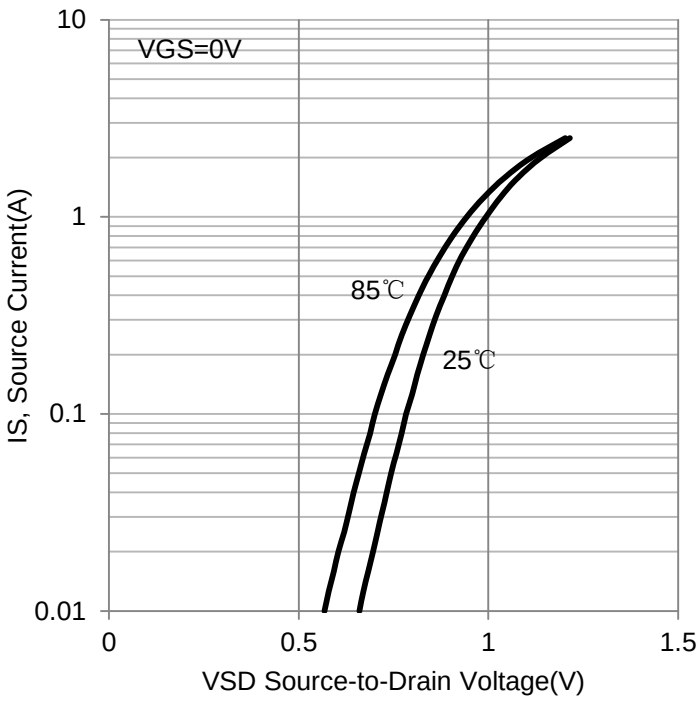
RDS(on) vs. VGS



RDS(on) vs. Temperature

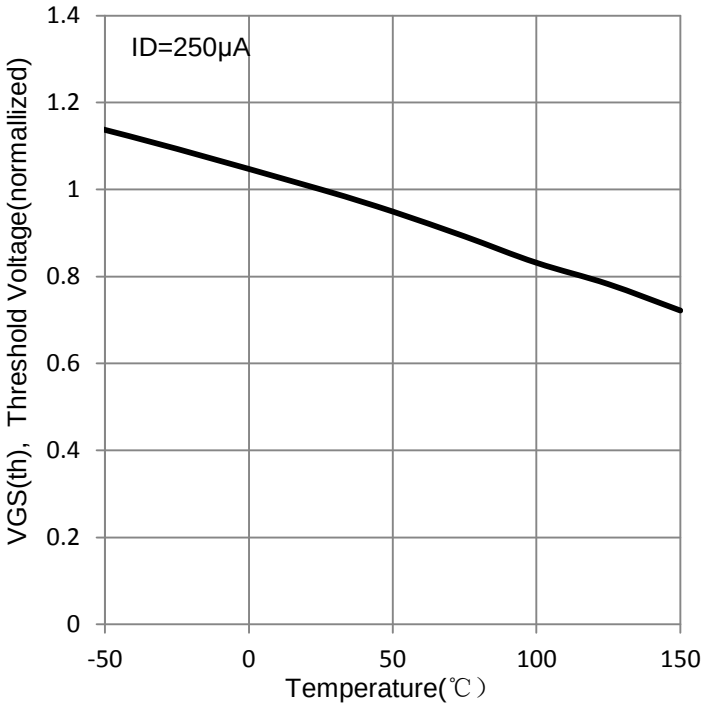


Capacitor vs.VDS

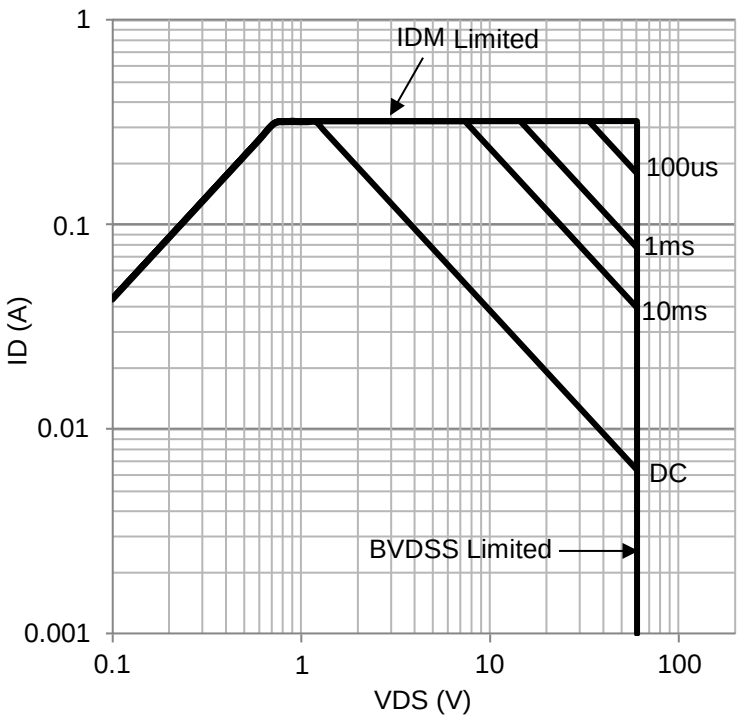


IS vs.VSD

6. ELECTRICAL CHARACTERISTICS CURVES（Con.)

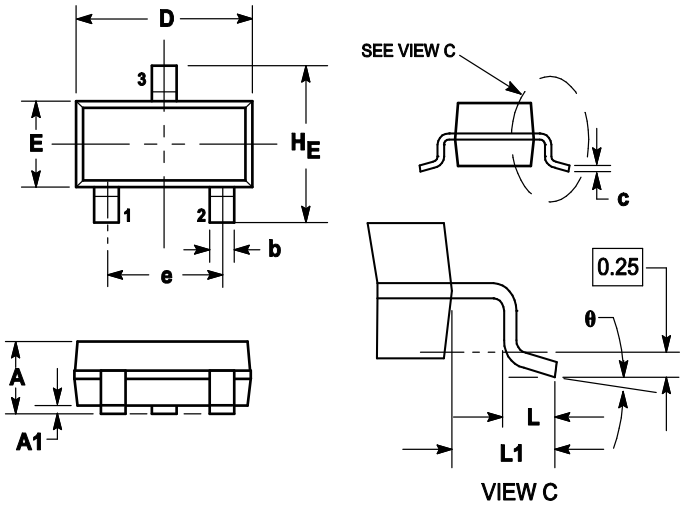


VGS(th) vs. Temperature



Safe Operating Area

7.OUTLINE AND DIMENSIONS



Notes:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. MAXIMUM LEAD THICKNESS INCLUDES LEAD FINISH. MINIMUM LEAD THICKNESS IS THE MINIMUM THICKNESS OF BASE MATERIAL.
4. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.

	MILLIMETERS			INCHES		
DIM	MIN	NOM	MAX	MIN	NOM	MAX
A	0.89	1	1.11	0.035	0.04	0.044
A1	0.01	0.06	0.1	0.001	0.002	0.004
b	0.37	0.44	0.5	0.015	0.018	0.02
c	0.09	0.13	0.18	0.003	0.005	0.007
D	2.80	2.9	3.04	0.11	0.114	0.12
E	1.20	1.3	1.4	0.047	0.051	0.055
e	1.78	1.9	2.04	0.07	0.075	0.081
L	0.10	0.2	0.3	0.004	0.008	0.012
L1	0.35	0.54	0.69	0.014	0.021	0.029
H_E	2.10	2.4	2.64	0.083	0.094	0.104
θ	0°	---	10°	0°	---	10°

8.SOLDERING FOOTPRINT