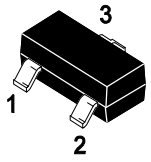
LP3401LT1G
S-LP3401LT1G

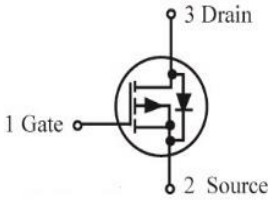
30V P-Channel Enhancement-Mode MOSFET

1. FEATURES

- VDS = -30V
- RDS(ON) < 70mΩ (VGS = -10V)
- RDS(ON) < 80mΩ (VGS = -4.5V)
- RDS(ON) < 120mΩ (VGS = -2.5V)
- 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.



SOT23(TO-236)



2. APPLICATIONS

- Advanced trench process technology
- High density cell design for ultra low on-resistance.

3. DEVICE MARKING AND ORDERING INFORMATION

Device	Marking	Shipping
LP3401LT1G	A1	3000/Tape&Reel
LP3401LT3G	A1	10000/Tape&Reel

4. MAXIMUM RATINGS(Ta = 25ºC)

Parameter	Symbol	Limits	Unit
Drain–Source Voltage	VDSS	-30	V
Gate–to–Source Voltage – Continuous	VGS	±12	V
Drain Current – Continuous TA = 25°C(Note 1) – Pulsed (Note 2)	 ID IDM	 -4.2 -30	A

5. THERMAL CHARACTERISTICS

Parameter	Symbol	Limits	Unit
Power Dissipation(Note 1)	PD	1.4	W
Thermal Resistance, Junction–to–Ambient(Note 1)	RΘJA	125	ºC/W
Junction and Storage temperature	TJ,Tstg	−55~+150	°C

1.The value of RθJA is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with TA =25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

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

6. ELECTRICAL CHARACTERISTICS (Ta= 25°C)

OFF CHARACTERISTICS

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain–Source Breakdown Voltage (VGS = 0, ID = -250μA)	VBRDSS	-30	-	-	V
Zero Gate Voltage Drain Current (VGS = 0, VDS = -24 V)	IDSS	-	-	-1	μA
Gate–Body Leakage Current, Forward (VGS = 12 V)	IGSSF	-	-	100	nA
Gate–Body Leakage Current, Reverse (VGS = - 12 V)	IGSSR	-	-	-100	nA

ON CHARACTERISTICS (Note 3)

On state drain current (VGS = -4.5V, VDS = -5V)	ID(on)	-25	-	-	A
Gate Threshold Voltage (VDS = VGS, ID = -250μA)	VGS(th)	-0.6	-1.0	-1.3	V
Static Drain–Source On–State Resistance	RDS(on)				mΩ
(VGS = -10 V, ID = -4.2 A)		-	-	70	
(VGS = -4.5 V, ID = -4 A)		-	-	80	
(VGS = -2.5 V, ID = -1 A)		-	-	120	

DYNAMIC CHARACTERISTICS

Input Capacitance (VGS = 0 V, f = 1.0MHz,VDS= -15 V)	Ciss	-	743	-	pF
Output Capacitance (VGS = 0 V, f = 1.0MHz,VDS= -15 V)	Coss	-	51.3	-	pF
Reverse Transfer Capacitance (VGS = 0 V, f = 1.0MHz,VDS= -15 V)	Crss	-	44.2	-	pF
Total Gate Charge (VDS = -15V, VGS = -4.5V, ID = -4A)	Qg	-	7.3	-	nC
Gate-Source Charge	Qgs	-	1.33	-	
Gate-Drain Charge	Qgd	-	2.6	-	
Gate-Resistance (VGS = 0 V, VDS=0V,f=1MHz)	Rg	-	8.5	-	Ω

SWITCHING CHARACTERISTICS

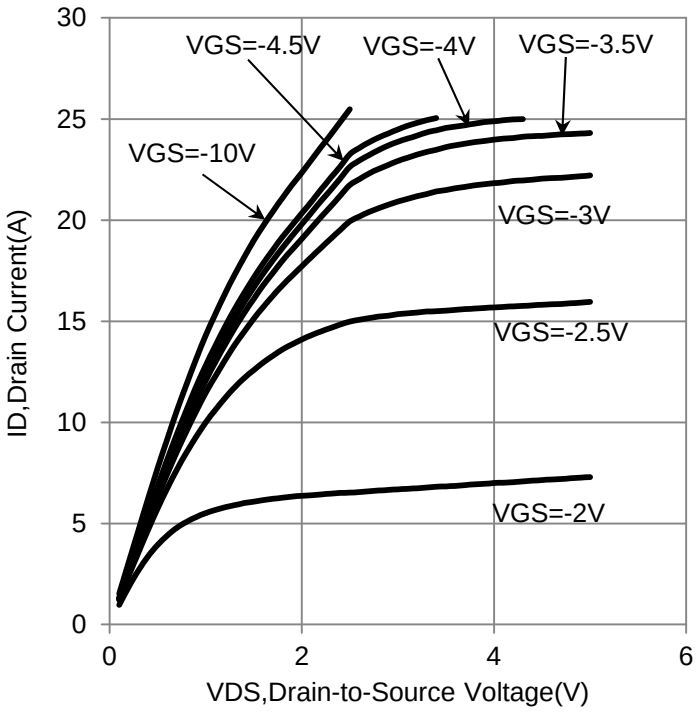
Turn-On Delay Time	(VDS=-15V, RL =3.6Ω, RGEN=6.2Ω ,VGS=-10V)	td(on)	-	2.35	-	ns
Rise Time		tr	-	9.85	-	
Turn-Off Delay Time		td(off)	-	51.7	-	
Fall Time		tf	-	16.1	-	

SOURCE–DRAIN DIODE CHARACTERISTICS

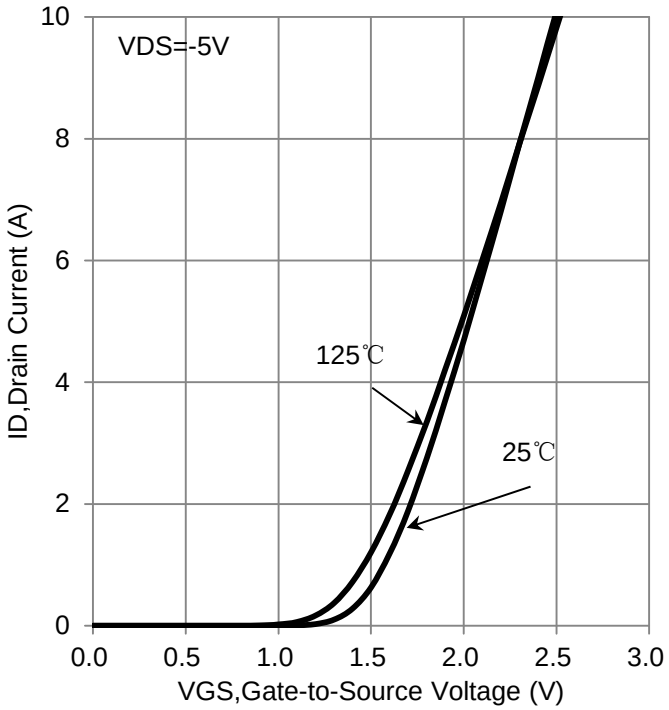
Forward Voltage (VGS = 0 V, ISD = -1 A)	VSD	-	-0.75	-1.3	V

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

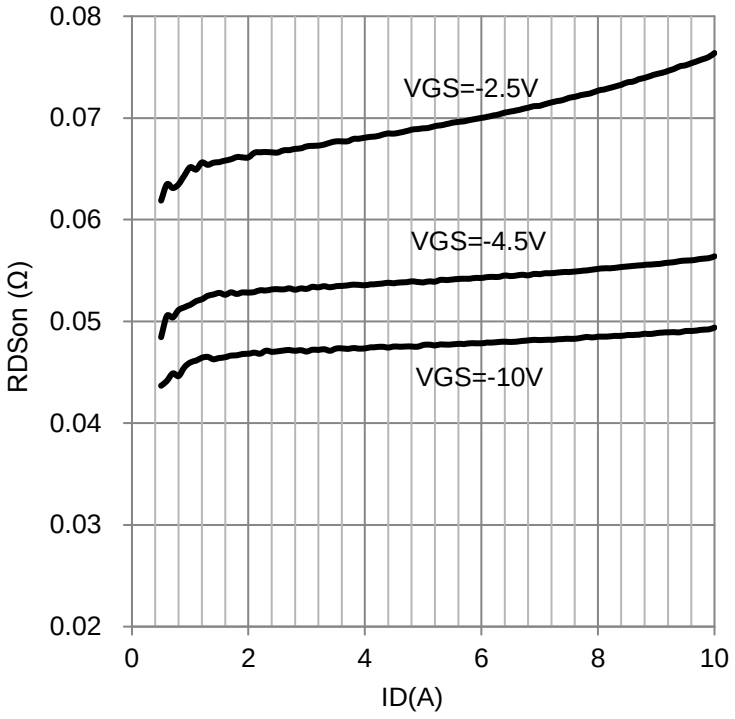
7. ELECTRICAL CHARACTERISTICS CURVES



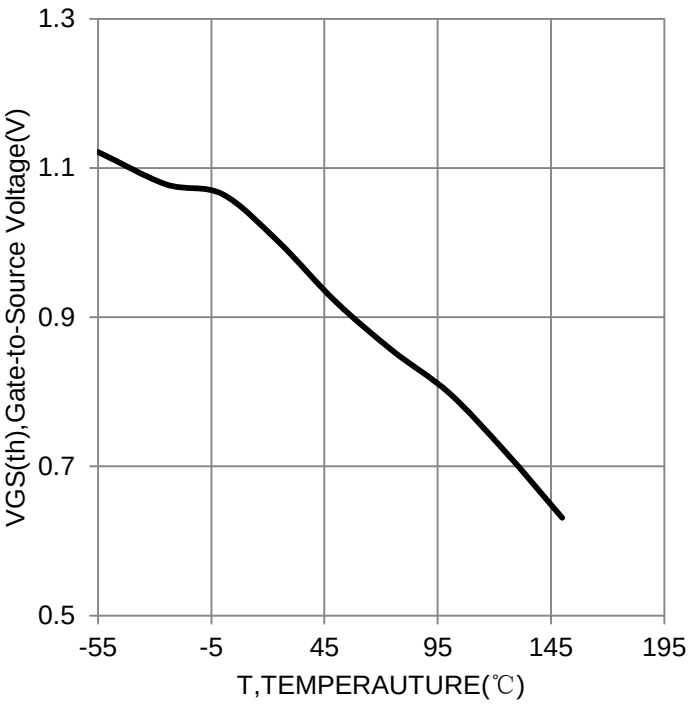
On-Region Characteristics



Transfer Characteristics

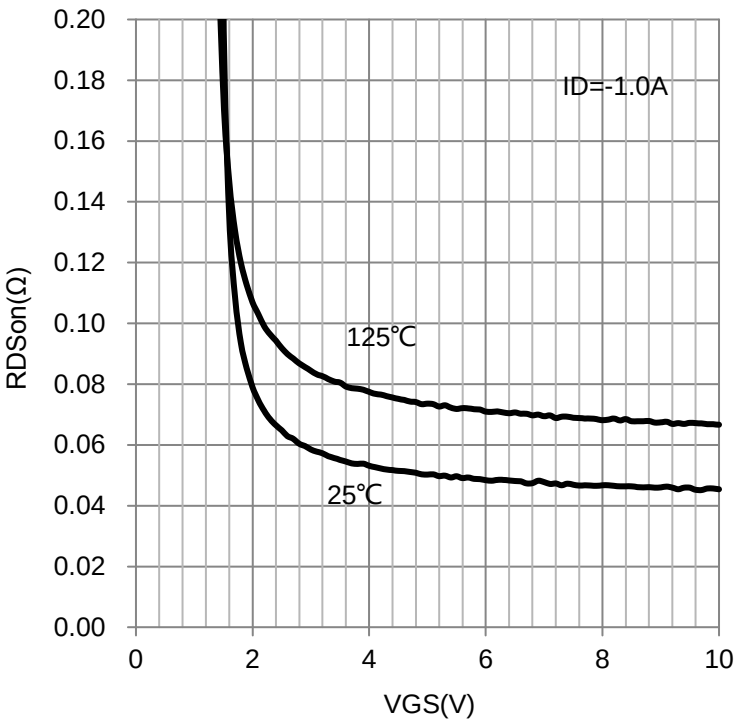


RDS(on) vs. ID

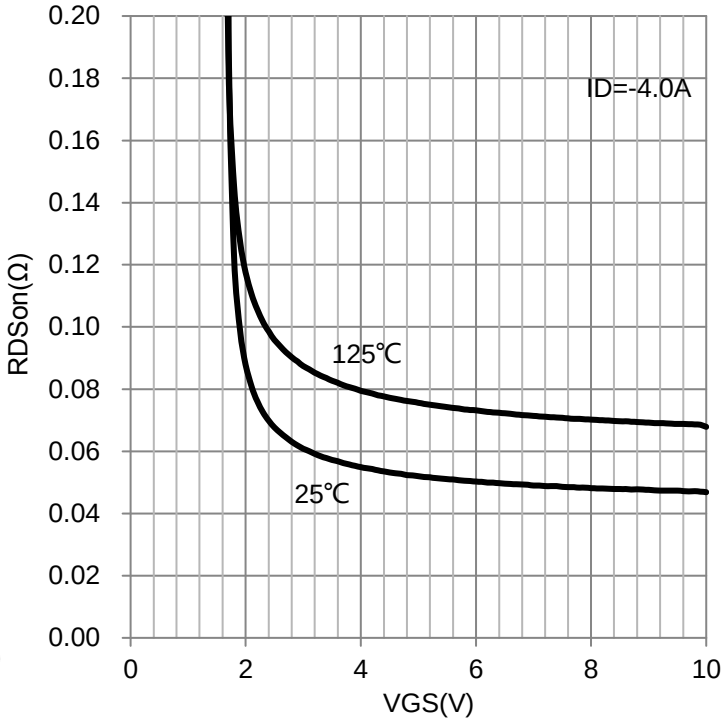


Temperature vs. Gate Threshold Voltage

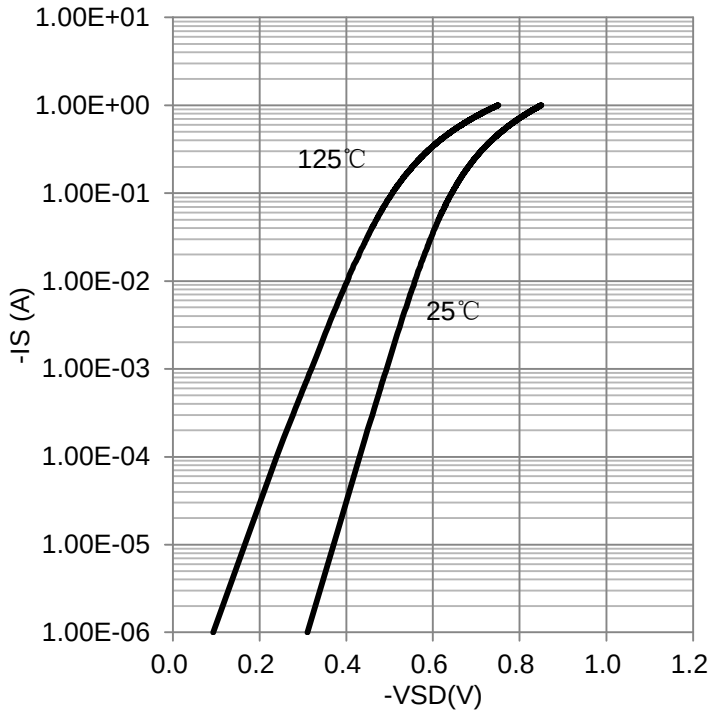
7 ELECTRICAL CHARACTERISTICS CURVES(Con.)



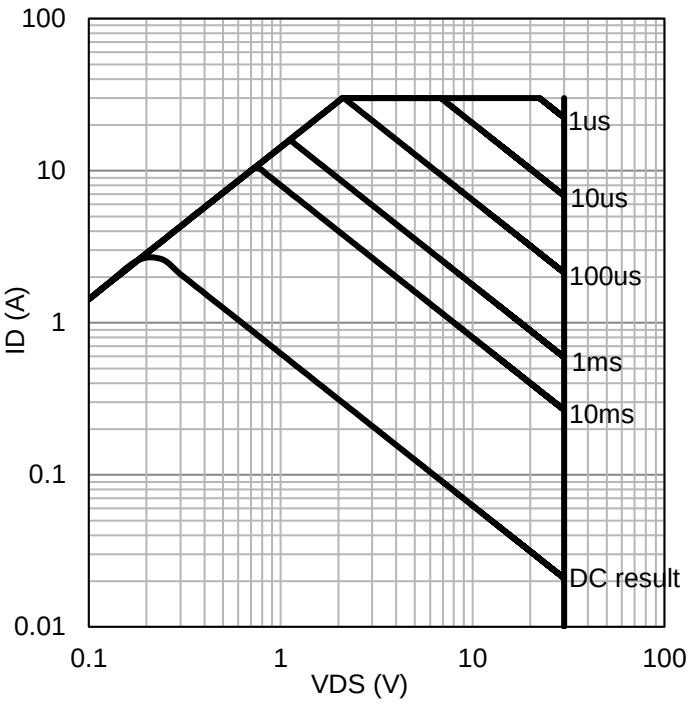
RDS(on) vs. VGS



RDS(on) vs. VGS

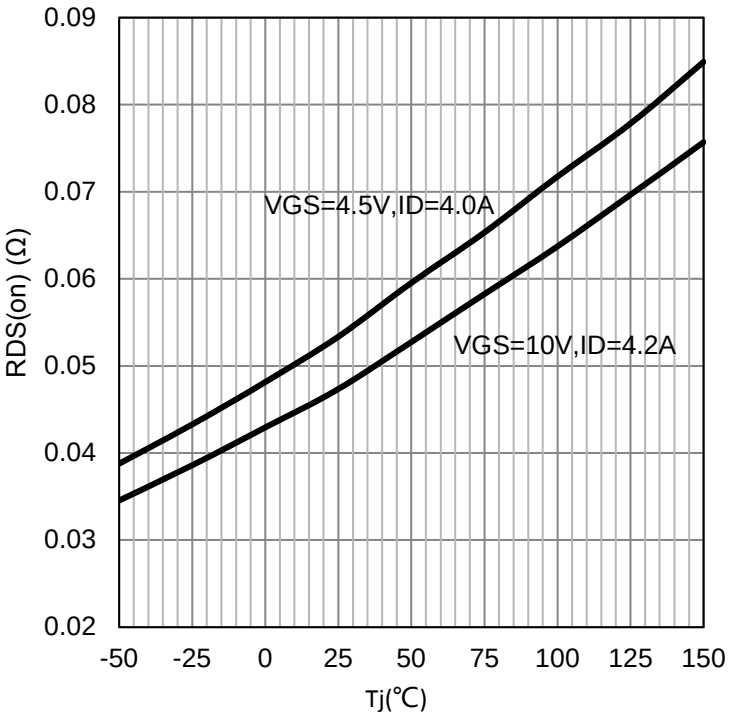


Body-Diode Characteristics

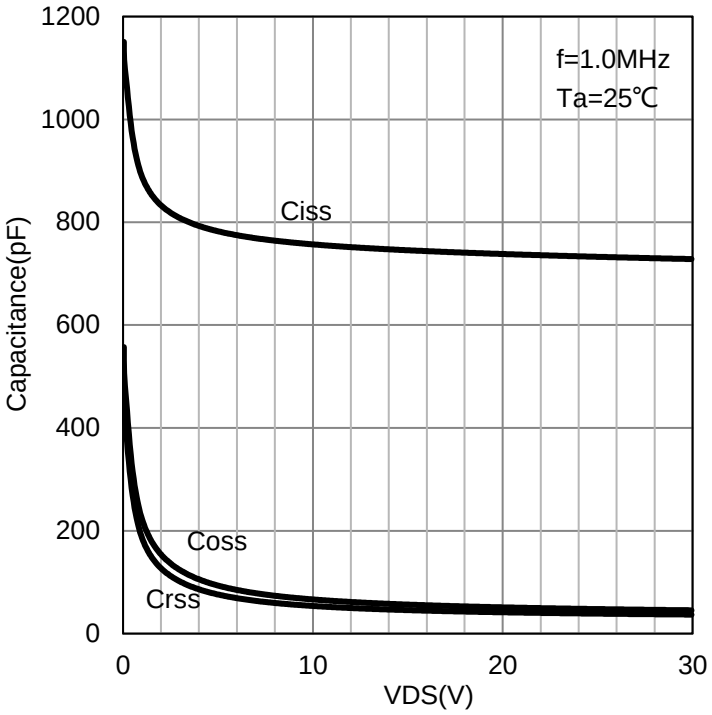


Safe Operating Area

7 ELECTRICAL CHARACTERISTICS CURVES(Con.)

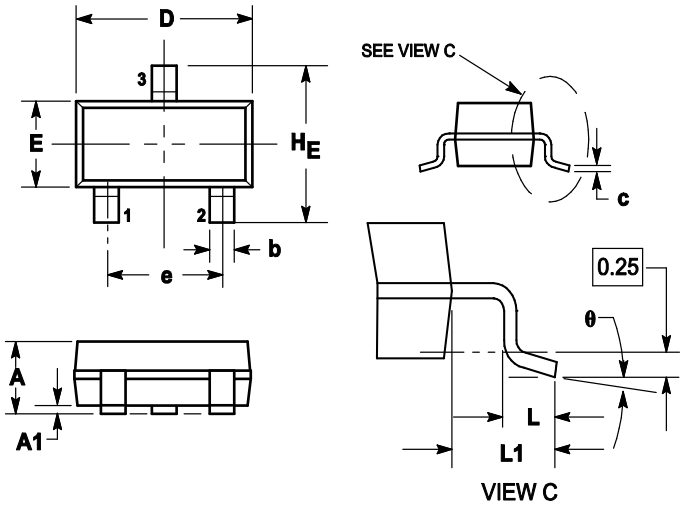


RDS(on) vs. Tj



Capacitance

8.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°

9.SOLDERING FOOTPRINT