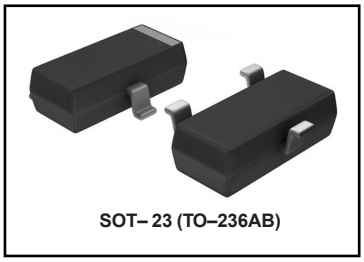
20V P-Channel Enhancement-Mode MOSFET

P2301BLT1G



V_{DS}= -20V

$R_{DS(ON)}$, Vgs@-4.5V, Ids@-2.8A = 100 mΩ

$R_{DS(ON)}$, Vgs@-2.5V, Ids@-2.0A = 150 mΩ

Features

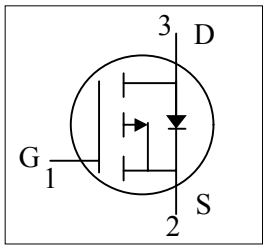
Advanced trench process technology

High Density Cell Design For Ultra Low On-Resistance

Fully Characterized Avalanche Voltage and Current

Improved Shoot-Through FOM

we declare that the material of product compliance with RoHS reuirements.



Simple Drive Requirement

Small Package Outline

Surface Mount Device

Ordering Information

Device	Marking	Shipping
P2301BLT1G	0B	3000/Tape & Reel
P2301BLT3G	0B	10,000/Tape & Reel

Maximum Ratings and Thermal Characteristics (T_A = 25°C unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 8	
Continuous Drain Current		I_D	-2.8	A
Pulsed Drain Current 1)		I_{DM}	-8	
Maximum Power Dissipation	TA = 25°C	P_D	0.9	W
	TA = 75°C		0.57	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55 to 150	°C
Junction-to-Case Thermal Resistance		R_{qJC}		°C/W
Junction-to-Ambient Thermal Resistance (PCB mounted) 2)		R_{qJA}	140	

Note: 1. Repetitive Rating: Pulse width limited by the Maximum junction temperation

2. 1-in^2 2oz Cu PCB board

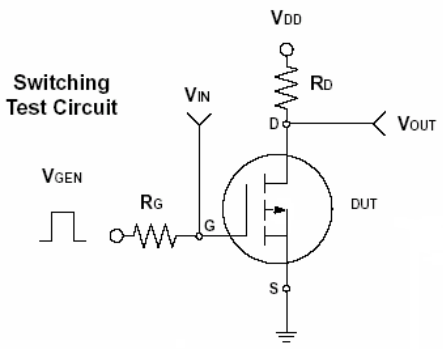
3. Guaranteed by design; not subject to production testing

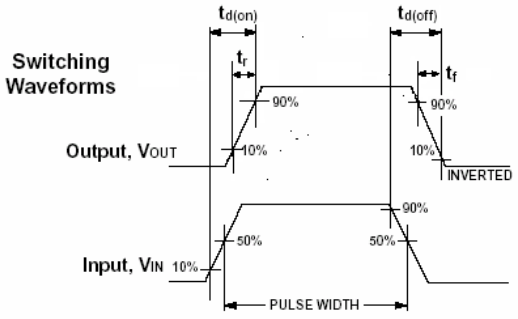
P2301BLT1G

ELECTRICAL CHARACTERISTICS

Parameter	Symbol	Test Condition	Min	Typ	Max	Unit
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS} = 0V, I_D = -250uA	-20	-	-	V
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = -4.5V, I_D = -2.8A		69	100	mΩ
Drain-Source On-State Resistance	$R_{DS(on)}$	V_{GS} = -2.5V, I_D = -2.0A		83	150	mΩ
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} =V_{GS}, I_D = -250uA	-0.40		-0.90	V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -9.6V, V_{GS} = 0V			-1	uA
Gate Body Leakage	I_{GSS}	V_{GS} = ±8V, V_{DS} = 0V			±100	nA
Gate Resistance	Rg					Ω
Forward Transconductance	g_{fs}	V_{DS} = -5V, I_D = -4.0A		6.5		S
Dynamic [3)]						
Total Gate Charge	Q_g	V_{DS} = -6V, I_D = -2.8A V_{GS} = -4.5V		15.23		nC
Gate-Source Charge	Q_{gs}			5.49		
Gate-Drain Charge	Q_{gd}			2.74		
Turn-On Delay Time	$t_{d(on)}$	V_{DD} = -6V, R_L = 6Ω $I_D = -1A$, V_{GEN} = -4.5V R_G = 6Ω		17.28		ns
Turn-On Rise Time	t_r			3.73		
Turn-Off Delay Time	$t_{d(off)}$			36.05		
Turn-Off Fall Time	t_f			6.19		
Input Capacitance	C_{iss}	V_{DS} = -6V, V_{GS} = 0V f = 1.0 MHz		882.51		pF
Output Capacitance	C_{oss}			145.54		
Reverse Transfer Capacitance	C_{rss}			97.26		
Source-Drain Diode						
Max. Diode Forward Current	I_S				-2.4	A
Diode Forward Voltage	V_{SD}	I_S = -0.75A, V_{GS} = 0V		-0.8	-1.2	V

Note: Pulse test: pulse width <= 300us, duty cycle<= 2%





TYPICAL ELECTRICAL CHARACTERISTICS

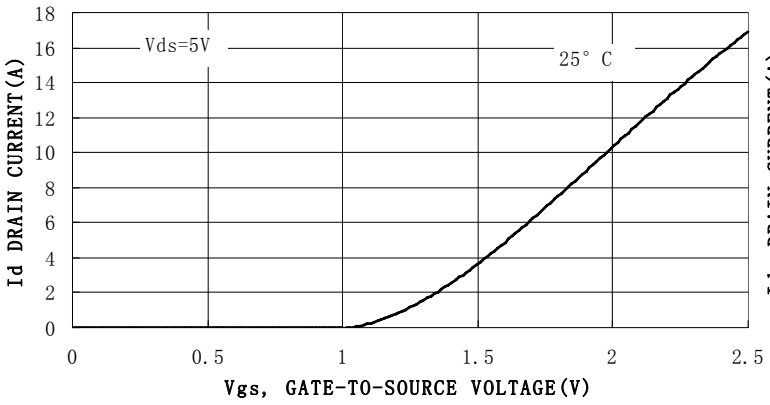


Figure 1. Transfer Characteristics

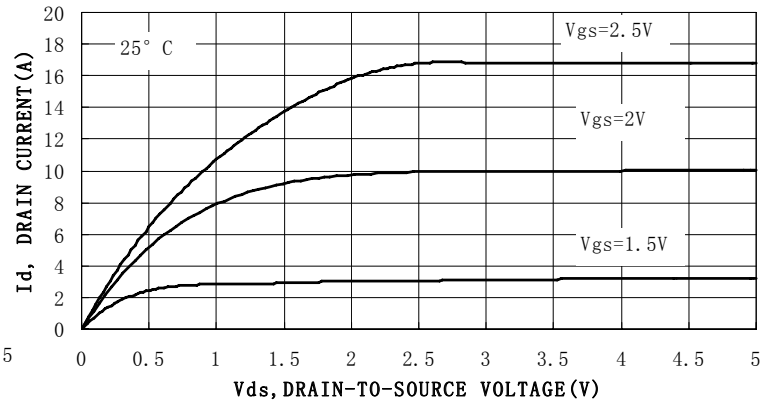


Figure 2. On–Region Characteristics

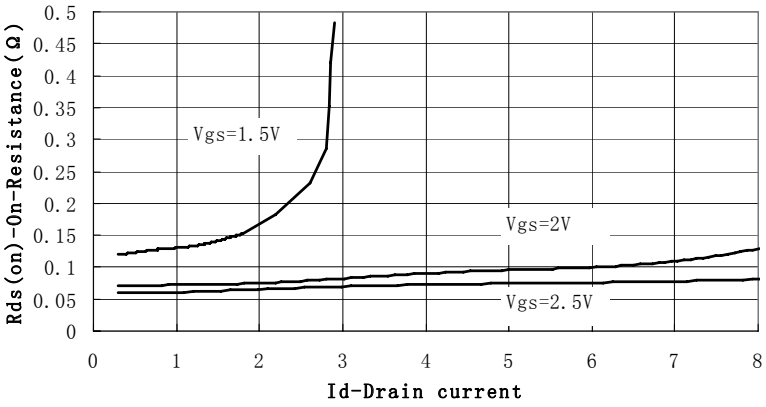


Figure 3. On–Resistance versus Drain Current

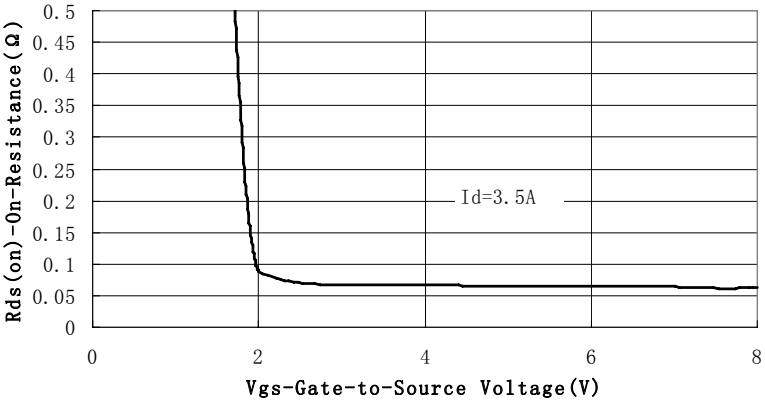


Figure 4. On-Resistance vs. Gate-to-Source Voltage

TYPICAL ELECTRICAL CHARACTERISTICS

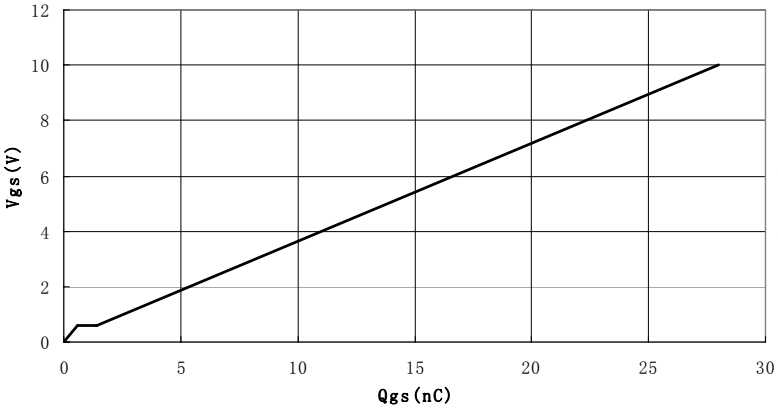


Figure 5. Gate Charge

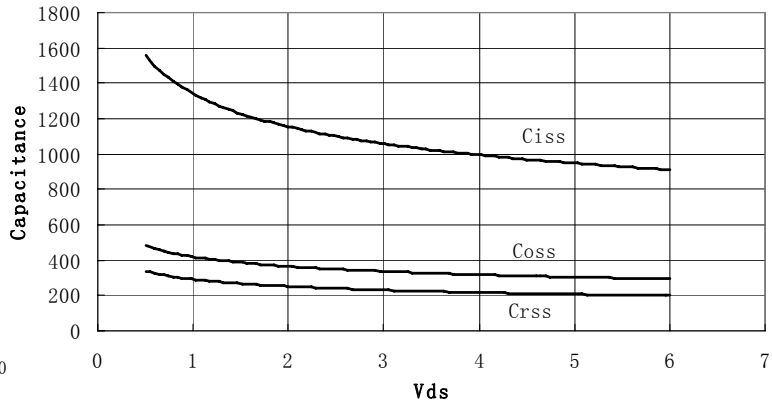


Figure 6. Capacitance

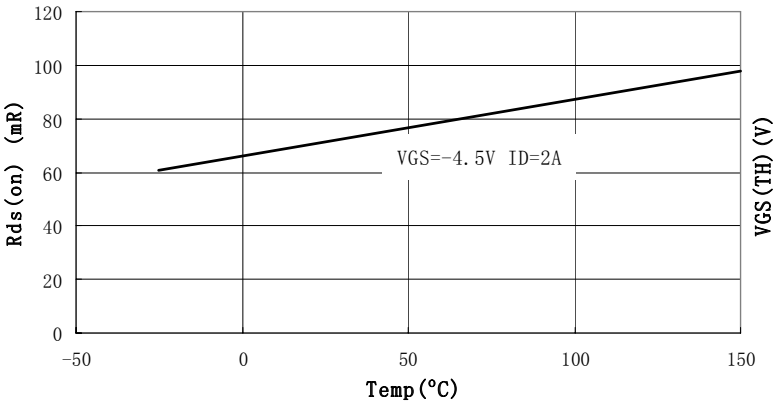


Figure 7. On-Resistance Vs.Junction Temperature

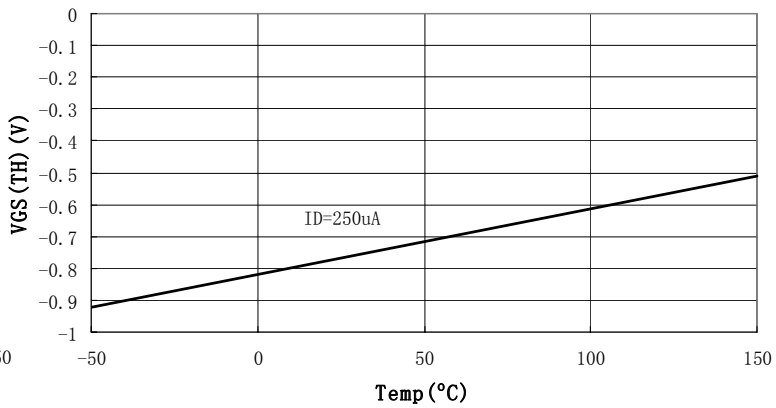
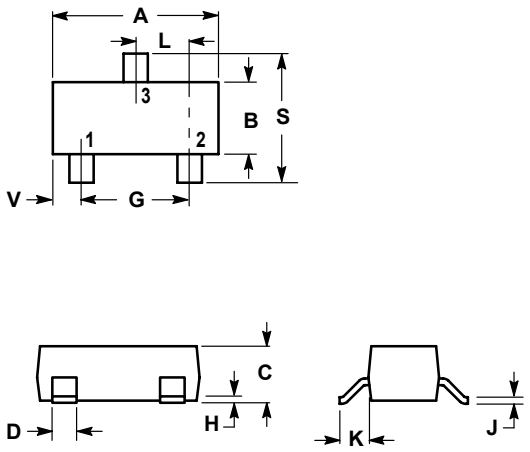


Figure 8. Vth Vs.Junction Temperature

P2301BLT1G

SOT–23



NOTES:

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

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.1102	0.1197	2.80	3.04
B	0.0472	0.0551	1.20	1.40
C	0.0350	0.0440	0.89	1.11
D	0.0150	0.0200	0.37	0.50
G	0.0701	0.0807	1.78	2.04
H	0.0005	0.0040	0.013	0.100
J	0.0034	0.0070	0.085	0.177
K	0.0140	0.0285	0.35	0.69
L	0.0350	0.0401	0.89	1.02
S	0.0830	0.1039	2.10	2.64
V	0.0177	0.0236	0.45	0.60