Descriptions

This-20V -3.3A P-Channel MOSFET in a SOT-23-6 Plastic Package.

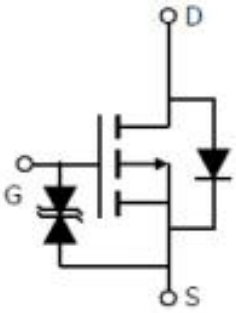
Features

- $R_{DS(ON)}$ < 110mΩ,VGS=-4.5V
- $R_{DS(ON)}$ < 150mΩ,VGS=-2.5V
- Halogen-free Product.

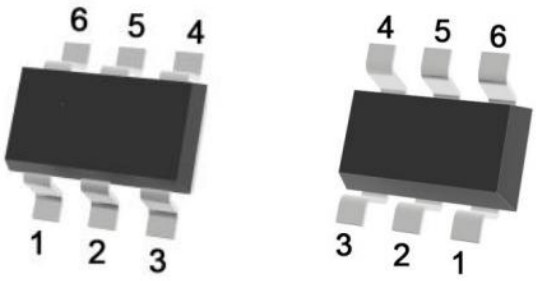
Applications

Primarily the display screen drive applications.

Equivalent Circuit



Pinning



PIN1，PIN 2，PIN 5，PIN 6： Drain

PIN 3: Gate

PIN 4: Source

Absolute Maximum Ratings(Ta=25℃)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DSS}	-20	V
Gate-Source Voltage		V_{GSS}	±8	V
Drain Current – Continuous		I_D	-3.3	A
Drain Current – Continuous		$I_D(T_A=70℃)$	-2.7	A
Pulsed Drain Current		I_{DM}	-17	A
Power Dissipation		P_D	1.18	W
Power Dissipation		$P_D(T_A=70℃)$	0.75	W
Storage Temperature Range		T_{stg}	-55～+150	℃
Operating Junction Temperature Range		T_j	-55～+150	℃
Maximum Junction-to-Ambient	t ≤ 10s	$R_{\theta JA}$	94	℃/W
Maximum Junction-to-Ambient	Steady-State		128	℃/W
Maximum Junction-to-Lead	Steady-State	$R_{\theta JL}$	66	℃/W

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain–Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V I_D=-250μA	-20	-22		V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=-250μA	-0.5	-0.6	-1.0	V
Static Drain–Source On–Resistance	$R_{DS(on)1}$	V_{GS}=-4.5V I_D=-2.8A		50	110	mΩ
	$R_{DS(on)2}$	V_{GS}=-2.5V I_D=-2.0A		58	150	mΩ
Zero Gate Voltage Drain Current	$I_{DSS(1)}$	V_{DS}=-20V V_{GS}=0V			-1	μA
	$I_{DSS(2)}$	V_{DS}=-20V V_{GS}=0V T_j=55℃			-5	μA
Gate–Body Leakage	I_{GSS}	V_{GS}=±8V V_{DS}=0V			±10	μA
Drain–Source Diode Forward Voltage	V_{SD}	I_S=-1.6A V_{GS}=0V		-0.8	-1.2	V
Maximum Body-Diode Continuous Current	I_S				-1.5	A
Total Gate Charge	Q_g	V_{DS}=-6V, V_{GS}=-4.5V, I_D=-2.8A		5.5		nC
Gate-Source Charge	Q_{gs}			1.5		
Gate-Drain Charge	Q_{gd}			1.3		

Electrical Characteristics(Ta=25℃)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Capacitance	C_{iss}	V_{DS}=-15V V_{GS}=0 f=1MHz		510		pF
Output Capacitance	C_{oss}			53		
Reverse Transfer Capacitance	C_{rss}			17		
Turn–On Delay Time	$t_{d(on)}$	V_{DD}=-6V R_L=6Ω R_G=6Ω V_{GS}=-4.5V		1360		ns
Turn–On Rise Time	t_r			831		
Turn–Off Delay Time	$t_{d(off)}$			5520		
Turn–Off Fall Time	t_f			1520		

Electrical Characteristic Curve

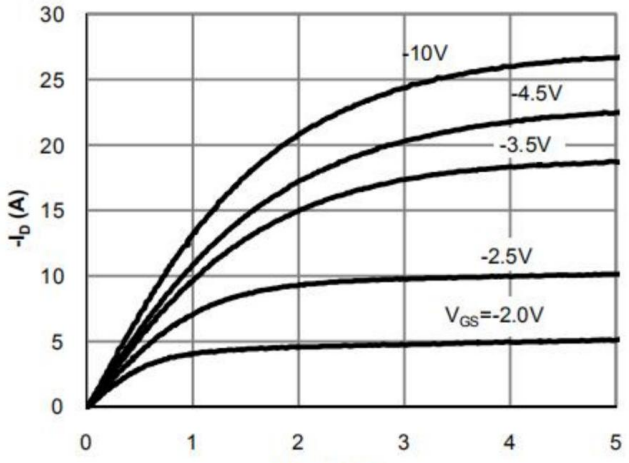


Fig 1: On-Region Characteristics

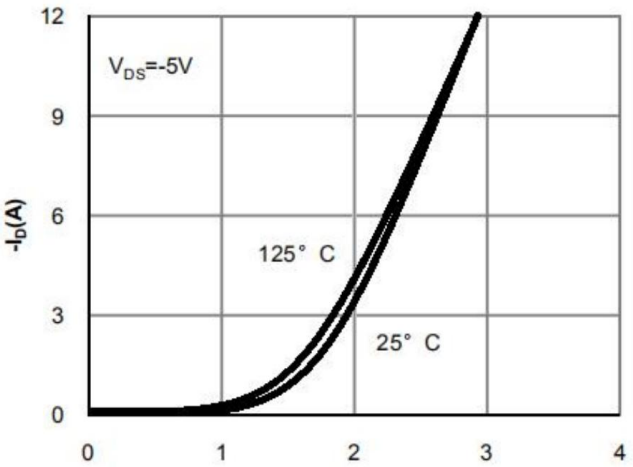


Figure 2: Transfer Characteristics

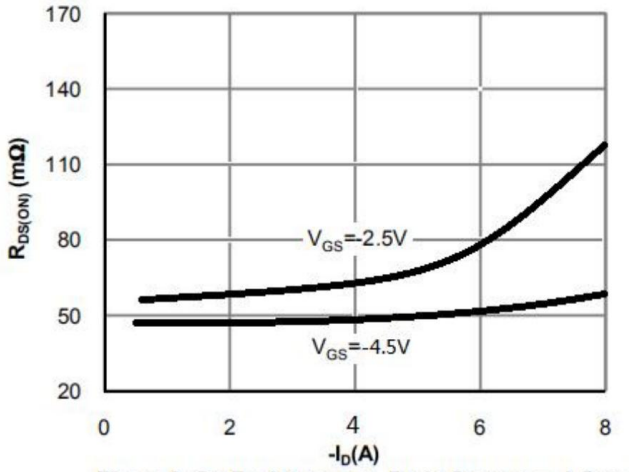


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

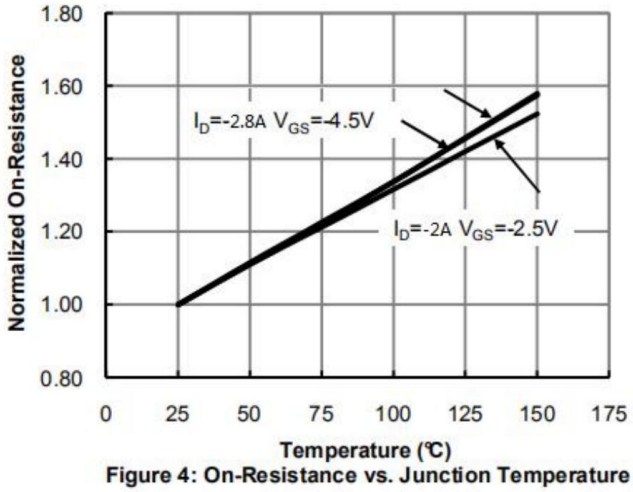


Figure 4: On-Resistance vs. Junction Temperature

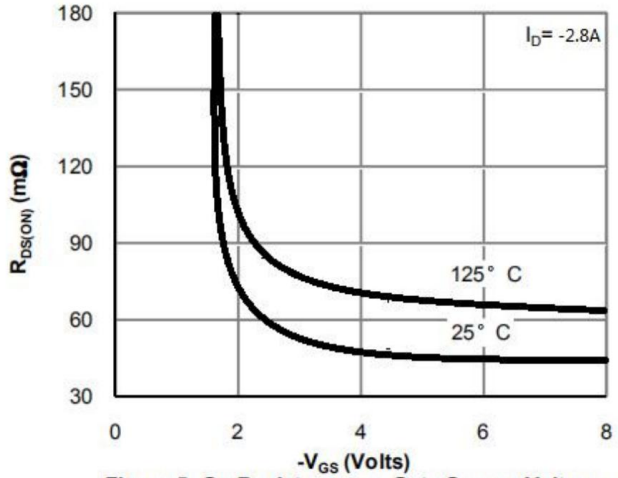


Figure 5: On-Resistance vs. Gate-Source Voltage

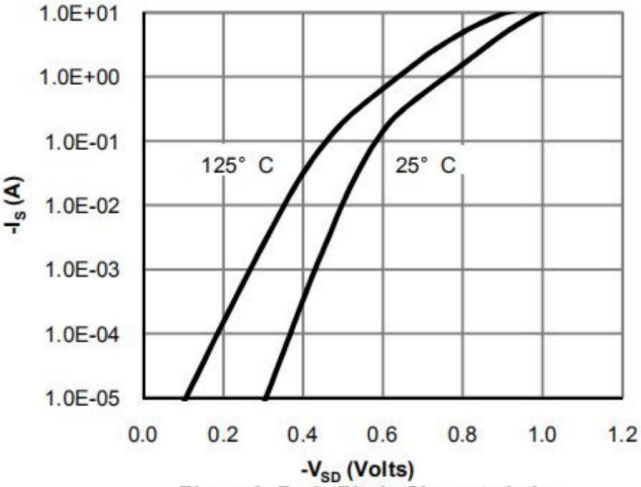


Figure 6: Body-Diode Characteristics

Electrical Characteristic Curve

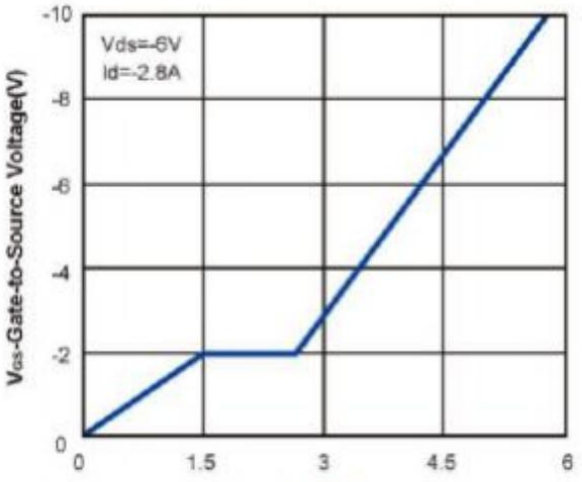


Figure 7: Gate-Charge Characteristics

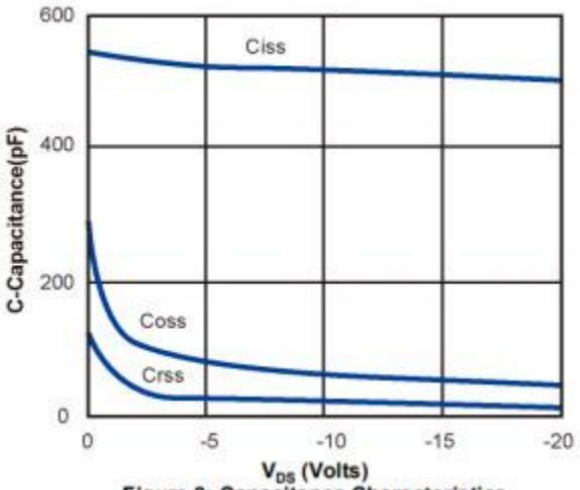


Figure 8: Capacitance Characteristics

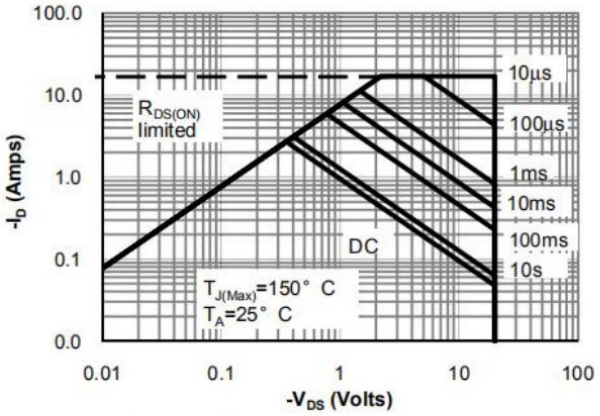


Figure 9: Maximum Forward Biased Safe Operating Area

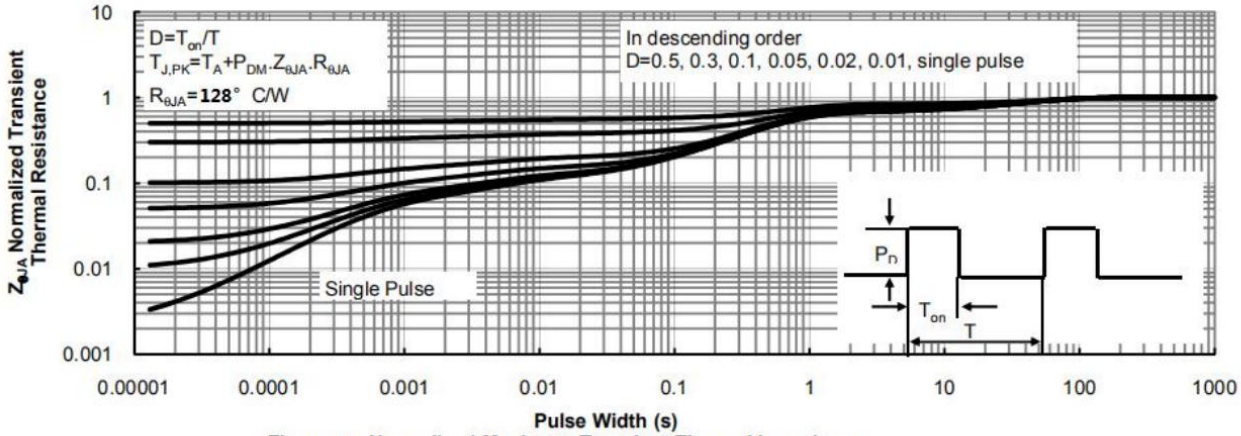
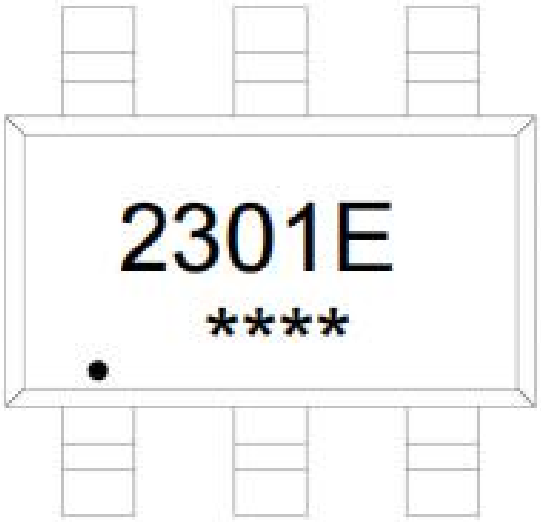


Figure 10: Normalized Maximum Transient Thermal Impedance

Marking Instructions



Note:

2301E: Product Type.

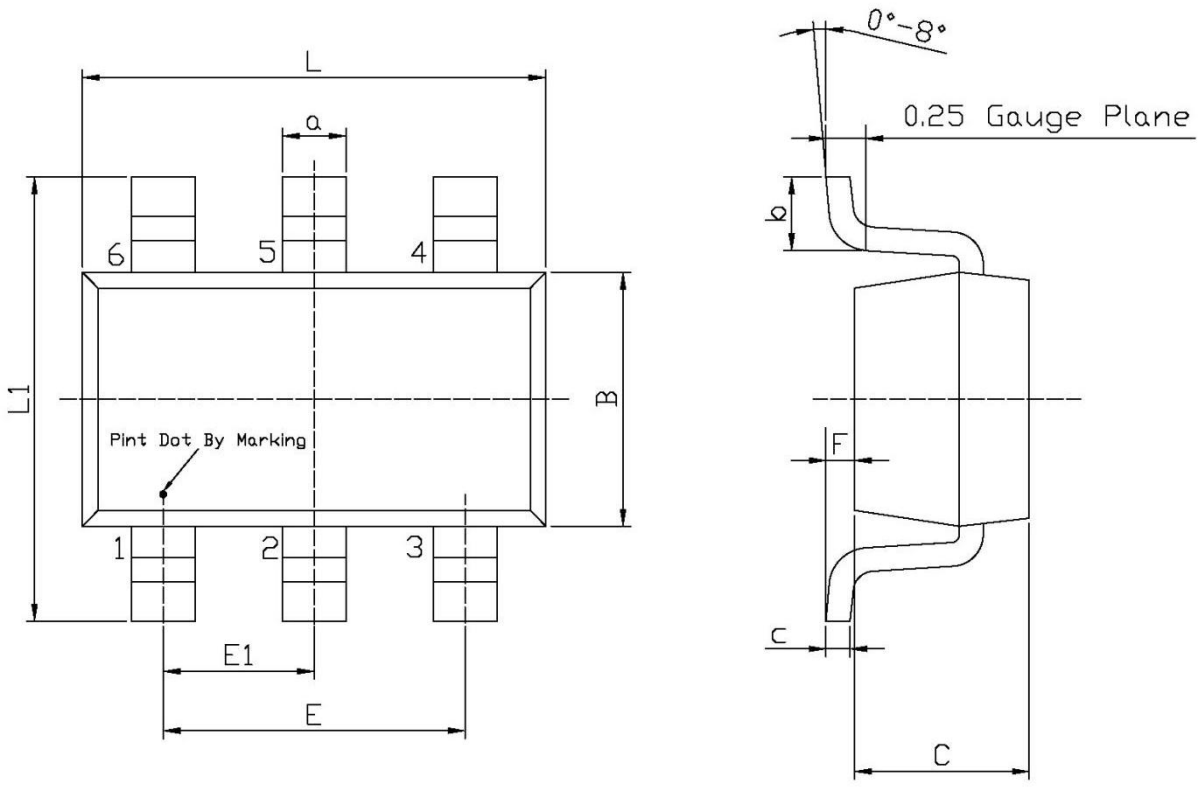
****: Company Code

Packaging SPEC

REEL INFORMATION

Package Type	Units					Dimension (unit：mm³)		
	Units/Reel	Reels/Inner Box	Units/Inner Box	Inner Boxes/Outer Box	Units/Outer Box	Reel	Inner Box	Outer Box
SOT23-6	3,000	10	30,000	4	120,000	7″ ×8	210×205×205	445×230×435

Package Outline Dimensions



Unit: mm

Symbol	Dimensions In Millimeters		Symbol	Dimensions In Millimeters	
	Min	Max		Min	Max
L	2.82	3.02	E1	0.85	1.05
B	1.50	1.70	a	0.35	0.50
C	0.90	1.30	c	0.10	0.20
L1	2.60	3.00	b	0.35	0.55
E	1.80	2.00	F	0	0.15

SOT23-6