Features

- Excellent Stability and Uniformity
- High Dense Cell Design for Extremely Low RDS(ON)
- Epoxy Meets UL 94 V-0 Flammability Rating
- Moisture Sensitivity Level 1
- Halogen Free. “Green” Device (1)
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

P-CHANNEL MOSFET

Maximum Ratings

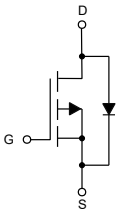
- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance:90°C/W Junction to Ambient(Steady-State)(2)

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Volltage		V_{GS}	±10	V
Continuous Drain Current	T_A=25°C	I_D	-4.2	A
	T_A=100°C		-2.7	
Pulsed Drain Current(3)		I_{DM}	-21	A
Total Power Dissipation(4)		P_D	1.4	W

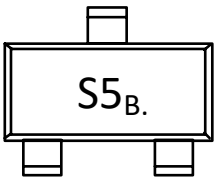
Note:

1. Halogen free "Green” products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
2. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The Power dissipation P_{DSM} is based on $R_{\theta JA}$ t≤ 10s and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.
3. Repetitive rating; pulse width limited by max. junction temperature.
4. P_D is based on max. junction temperature, using junction to ambient thermal resistance.

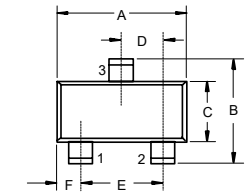
Internal Structure and Marking Code

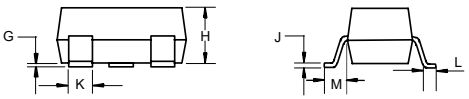


1. GATE
2. SOURCE
3. DRAIN



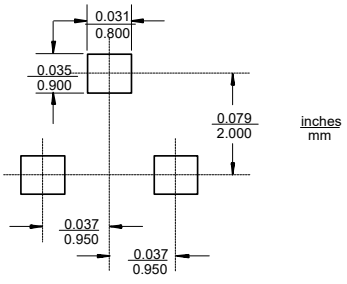
SOT-23





DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.110	0.120	2.80	3.04	
B	0.083	0.104	2.10	2.64	
C	0.047	0.055	1.20	1.40	
D	0.034	0.041	0.85	1.05	
E	0.067	0.083	1.70	2.10	
F	0.018	0.024	0.45	0.60	
G	0.0004	0.006	0.01	0.15	
H	0.035	0.043	0.90	1.10	
J	0.003	0.007	0.08	0.18	
K	0.012	0.020	0.30	0.51	
L	0.007	0.020	0.20	0.50	
M	0.022 REF		0.55 REF		

Suggested Solder Pad Layout



Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS}=0V, I_D=-250μA	-20			V
Gate-Source Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS} =±10V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-20V, V_{GS}=0V			-1	μA
Gate-Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.5		-0.9	V
Drain-Source On-Resistance	$R_{DS(on)}$	V_{GS}=-4.5V, I_D=-4A		30	39	mΩ
		V_{GS}=-2.5V, I_D=-3A		38	49	
		V_{GS}=-1.8V, I_D=-2A		51	63	
Gate Resistance	R_g	F=1 MHz, Open drain		14.1		Ω
Diode Characteristics						
Continuous Body Diode Current	I_S				-4.2	A
Pulse Diode Forward Current	I_{SM}				-10	
Diode Forward Voltage	V_{SD}	V_{GS}=0V, I_S=-3.3A		-0.8	-1.2	V
Reverse Recovery Time	t_{rr}	I_F=-4.1A, dI_F/dt=100A/μs		38		ns
Reverse Recovery Charge	Q_{rr}			22		nC
Dynamic Characteristics						
Input Capacitance	C_{iss}	V_{DS}=-4V,V_{GS}=0V,f=1MHz		821		pF
Output Capacitance	C_{oss}			149		
Reverse Transfer Capacitance	C_{rss}			126		
Total Gate Charge	Q_g	V_{DS}=-4V,V_{GS}=-4.5V,I_D=-4.1A		8.58		nC
	Q_g	V_{DS}=-4V,V_{GS}=-2.5V,I_D=-4.1A		4.7		
Gate-Source Charge	Q_{gs}	V_{DS}=-4V,V_{GS}=-2.5V,I_D=-4.1A		1.2		
Gate-Drain Charge	Q_{gd}	V_{DS}=-4V,V_{GS}=-2.5V,I_D=-4.1A		1.4		
Turn-On Delay Time	$t_{d(on)}$	V_{DD}=-4V, V_{GS}=-4.5V, R_{GEN}=-4.5Ω, I_D= -3.3A		8.6		ns
Turn-On Rise Time	t_r			12		
Turn-Off Delay Time	$t_{d(off)}$			61		
Turn-Off Fall Time	t_f			26		

Curve Characteristics

Fig. 1 - Typical Output Characteristics

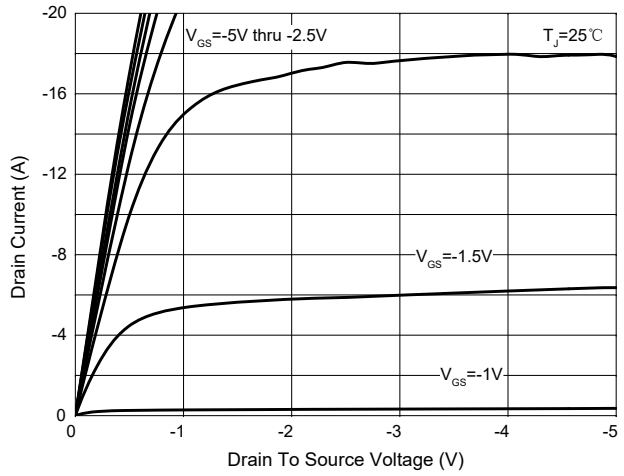


Fig. 2 - Transfer Characteristics

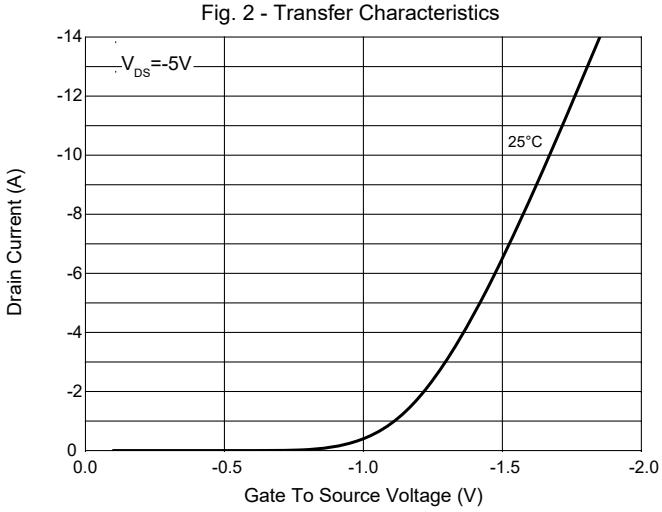


Fig. 3 - $R_{DS(ON)}$—V_{GS}

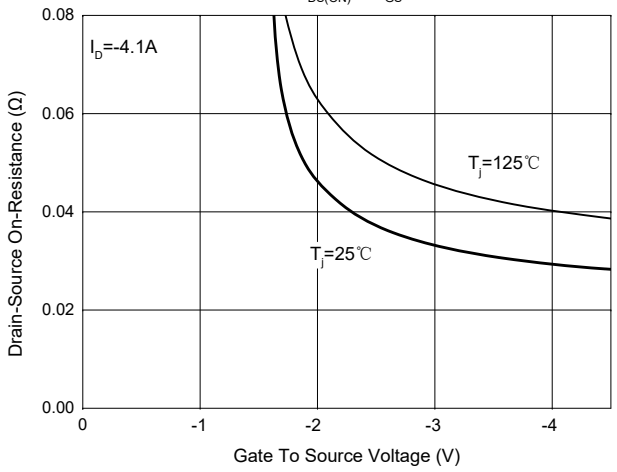


Fig. 4 - $R_{DS(ON)}$—I_D

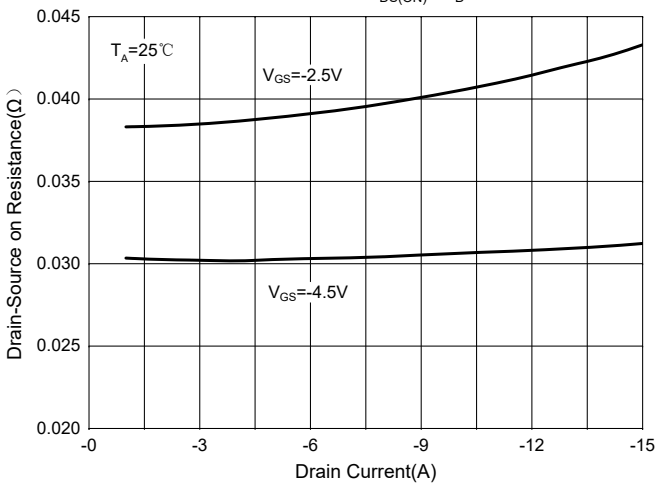


Fig. 5 - Capacitance Characteristics

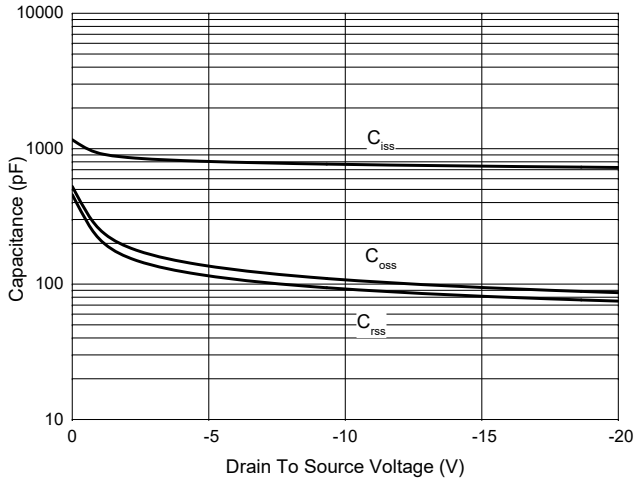
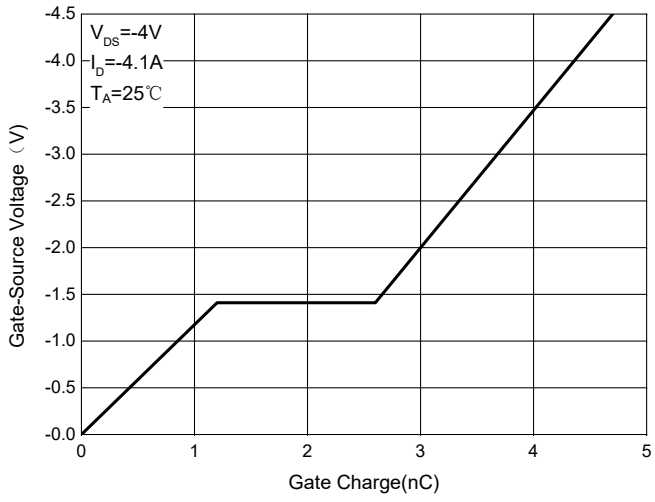


Fig. 6 - GateCharge



Curve Characteristics

Fig.7-NormalizedOnResistanceCharacteristics

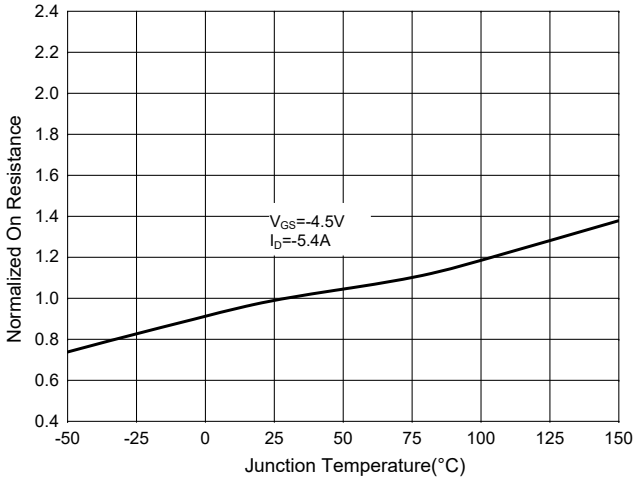


Fig. 8 - Nomalized Threshold voltage

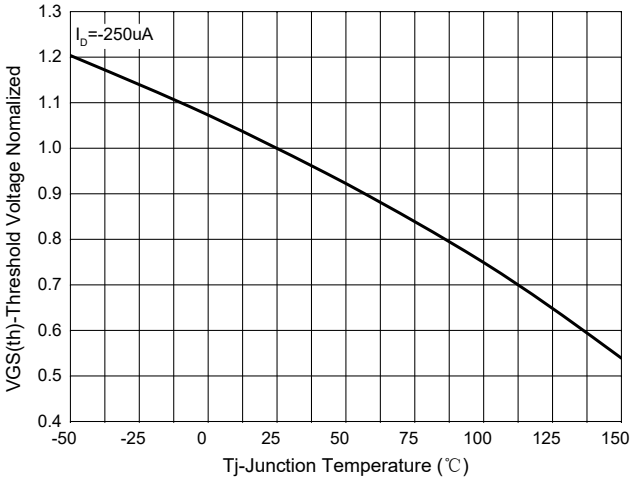


Fig. 9 - I_S—V_{SD}

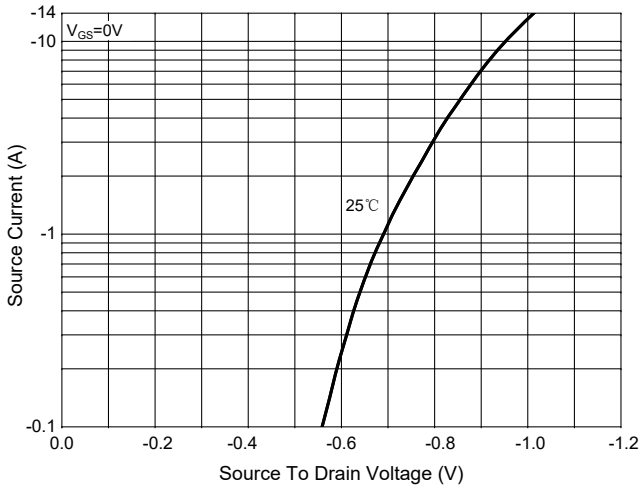


Fig. 10 - Current Dissipation

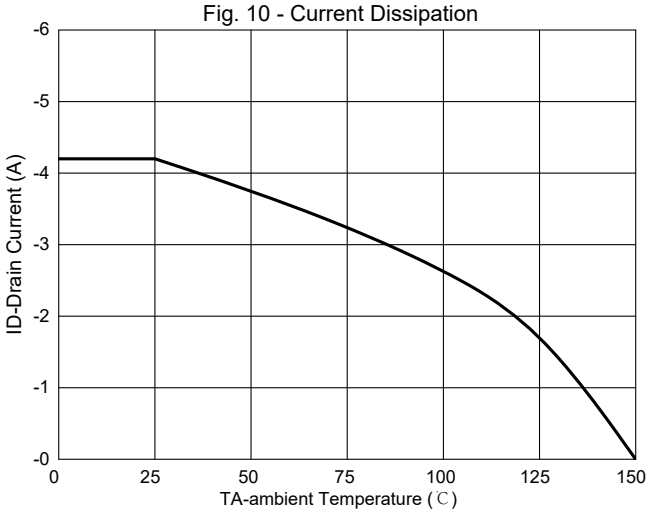
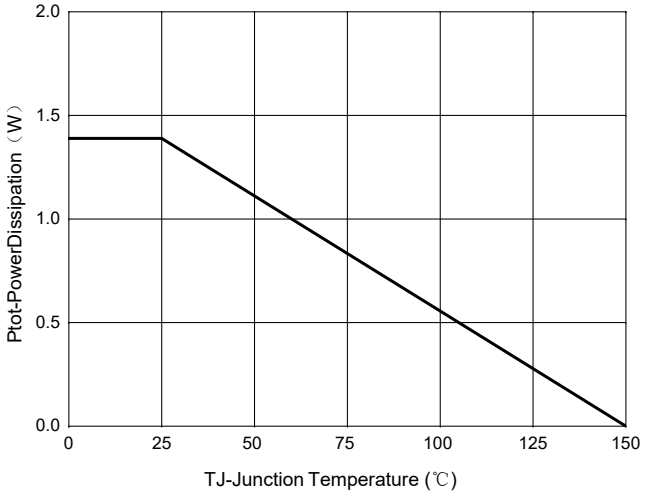


Fig.11-PowerDissipation



Curve Characteristics

Fig. 12 - Safe Operation Area

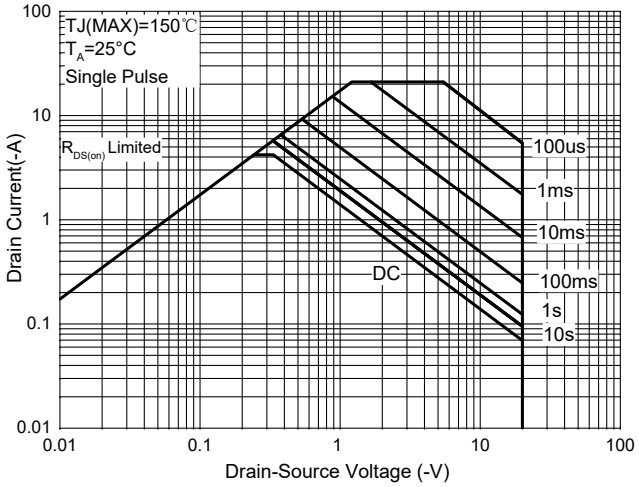
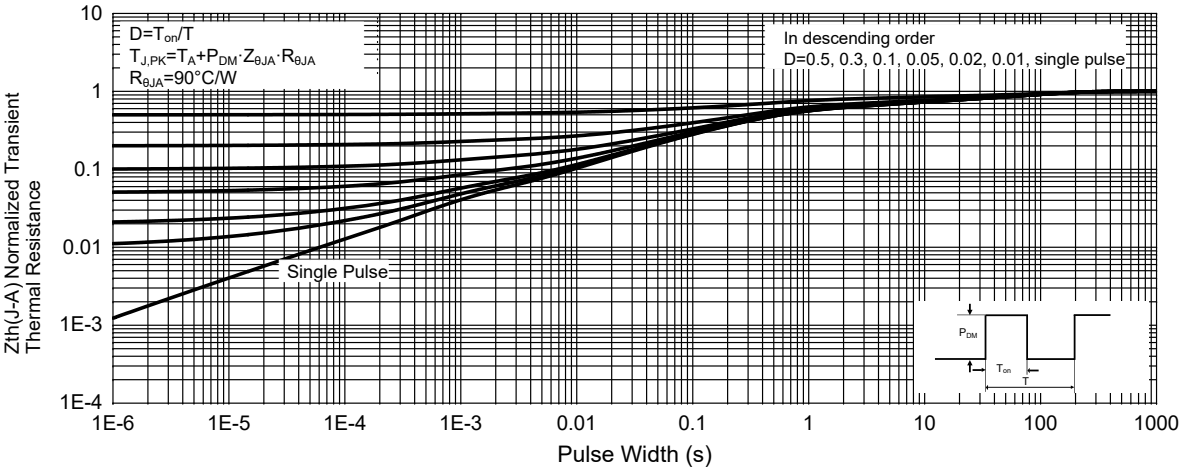


Fig. 13 -Normalized Transient Thermal Impedance



Ordering Information

Device	Packing
SI2305B-TP	Tape&Reel: 3Kpcs/Reel
SI2305B-13P	Tape&Reel: 10Kpcs/Reel

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