

PRODUCT CHARACTERISTICS

VDSS	-20V
$R_{DS(on)Typ}(@V_{GS}=-4.5V)$	60mΩ
$R_{DS(on)typ}(@V_{GS}=-2.5V)$	75mΩ
ID	-3A

APPLICATIONS

- Load switch for portable
- DC/DC converter

FEATURES

- * High Density Cell Design For Ultra Low On-Resistance
- * Advanced trench process technology

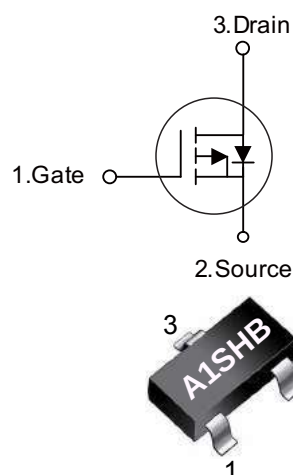
ORDER INFORMATION

Order codes		Package	Packing
Halogen-Free	Halogen		
N/A	SI2301	SOT-23	3000pieces/Real

ABSOLUTE MAXIMUM RATINGS ($T_C = 25^{\circ}C$ unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±10	V
Continuous Drain Current	I_D	-3	A
Pulsed Drain Current	I_{DM}	-10	A
Maximum Power Dissipation	$T_A = 25^{\circ}$	1.25	W
	$T_A = 75^{\circ}C$	0.8	W
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to 150	$^{\circ}C$
Junction-to-Ambient Thermal Resistance (PCB mounted)	R_{thJA}	100	$^{\circ}C/W$
Junction-to-Ambient Thermal Resistance (PCB mounted)	R_{thJA}	166	$^{\circ}C/W$

Symbol



■ ELECTRICAL CHARACTERISTICS ($T_C=25^{\circ}\text{C}$, unless otherwise specified)

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 = -3.0A	-	60	100	mΩ
		V _{GS} = -2.5V, I _D = -2.0A	-	75	120	mΩ
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D = -250uA	0.4	-	1	V
Zero Gate Voltage Drain Curren	I _{DSS}	V _{DS} = -20V, V _{GS} = 0V	-	-	-1	uA
		V _{DS} = -16V, V _{GS} = 0V TJ=55°C	-	-	-10	uA
Gate Body Leakage	I _{GSS}	V _{GS} = ± 10V, V _{DS} = 0V	-	-	±100	nA
Forward Transconductance	g _{fs}	V _{DS} = -5V, I _D = -2.8A	-	6.5	-	S
Dynamic						
Total Gate Charge	Q _g	V _{DS} = -6V, I _D ≅ -2.3A V _{GS} = -4.5V	-	5.8	-	nC
Gate-Source Charge	Q _{gs}		-	0.85	-	nC
Gate-Drain Charge	Q _{gd}		-	1.7	-	nC
Turn-On Delay Time	t _{d(on)}	V _{DD} = -6V, RL=6Ω I _D ≅ -1.A, V _{GEN} = -4.5V R _G = 6Ω	-	13	-	ns
Turn-On Rise Time	t _r		-	36	-	ns
Turn-Off Delay Time	t _{d(off)}		-	42	-	ns
Turn-Off Fall Time	t _f		-	34	-	ns
Input Capacitance	C _{iss}	V _{DS} = -6V, V _{GS} = 0V f = 1.0 MHz	-	415	-	pF
Output Capacitance	C _{oss}		-	223	-	pF
Reverse Transfer Capacitance	C _{rss}		-	87	-	pF
Source-Drain Diode						
Max. Diode Forward Current	I _S		-	-	-3.0	A
Diode Forward Voltage	V _{SD}	I _S = -1.0A, V _{GS} = 0V	-	-	-1.2	V

■ TYPICAL CHARACTERISTICS

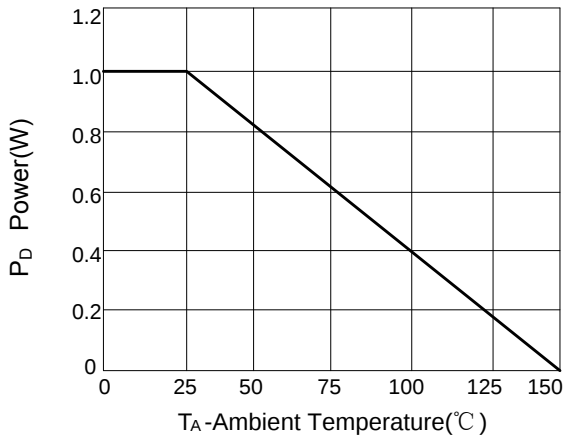


Figure 1: Power dissipation

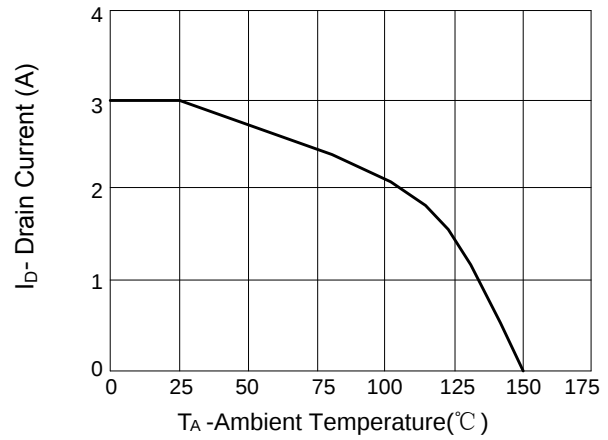


Figure 2: Drain current

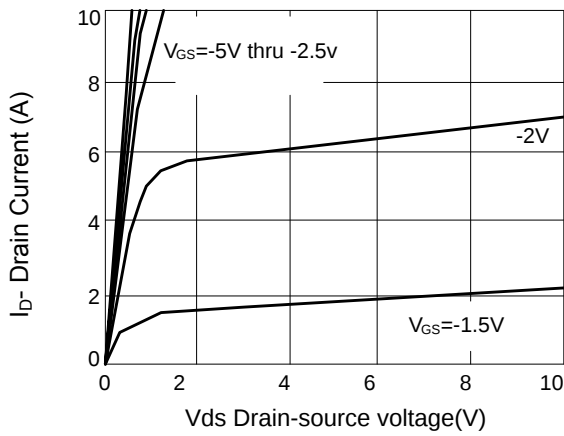


Figure 3: Output characteristics

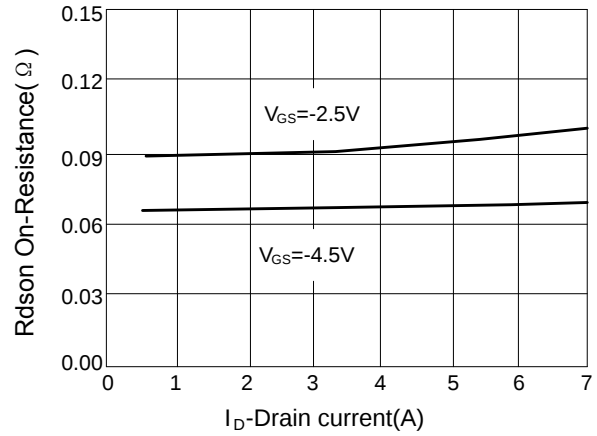


Figure 3: Output characteristics

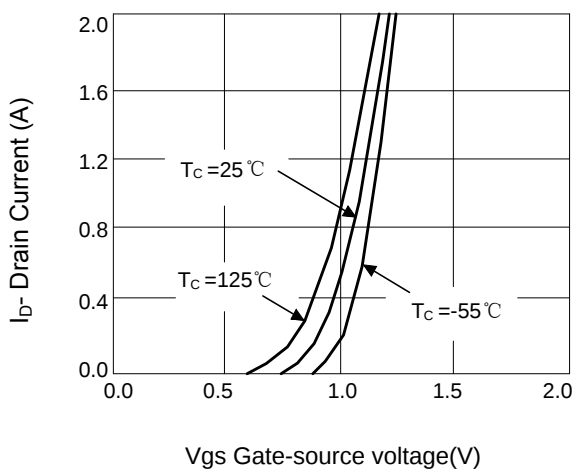


Figure 5: Transfer characteristics

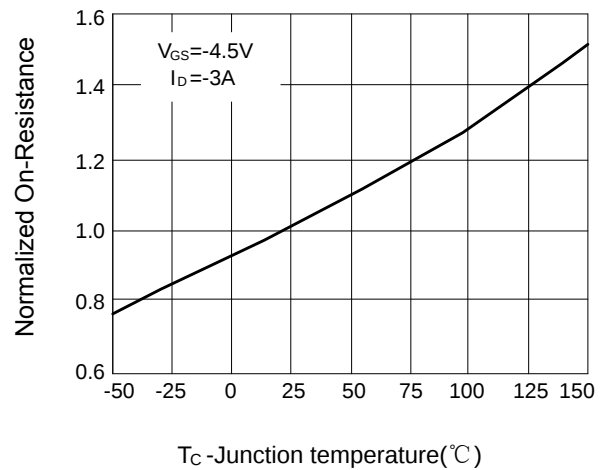


Figure 6: Drain-source on-resistance

■ TYPICAL CHARACTERISTICS

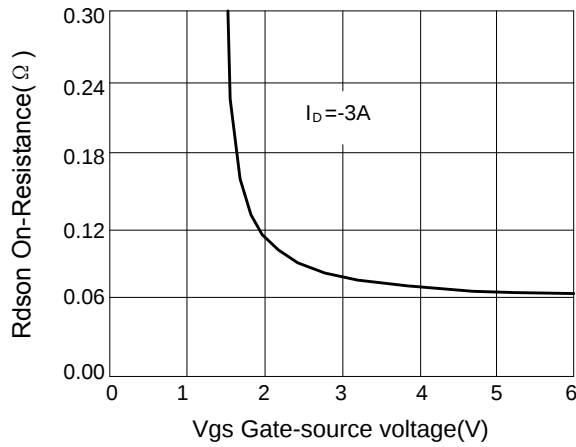


Figure 7: Rdson vs vgs

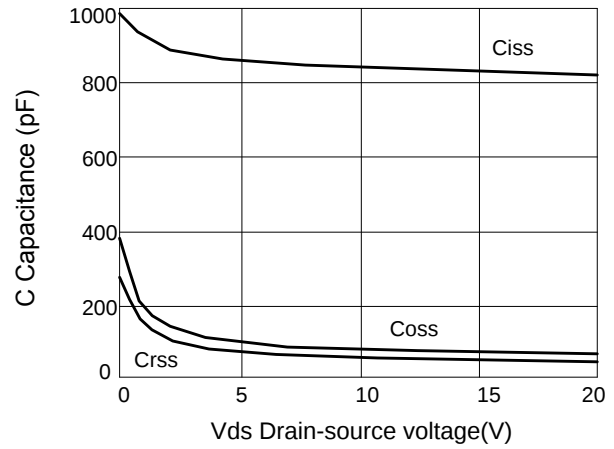


Figure 8: Capacitance vs vds

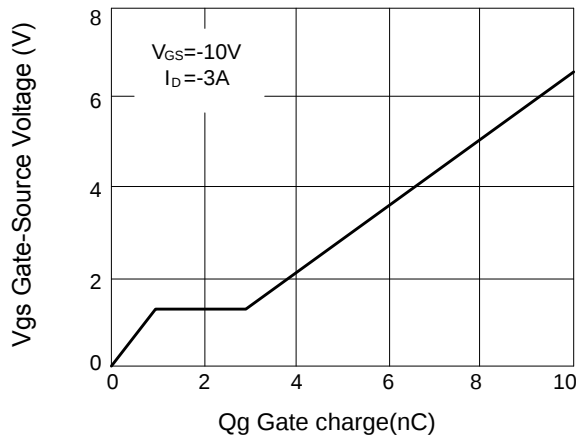


Figure 9: Gate charge

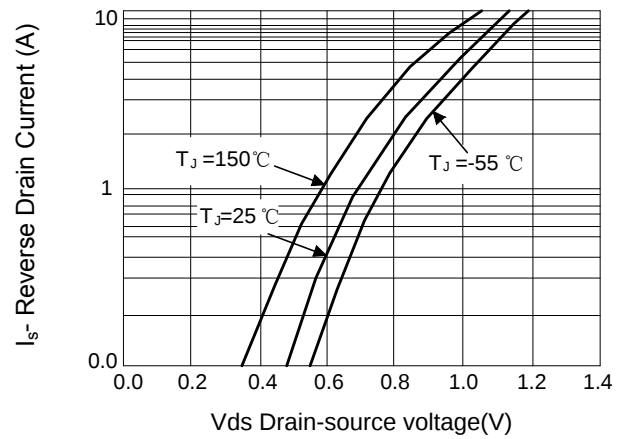


Figure 10: Source-drain diode forward

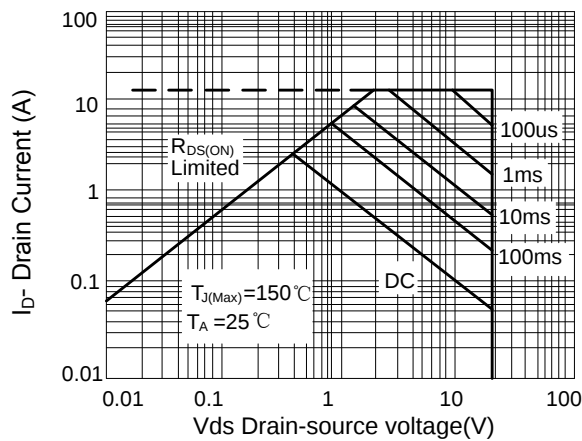
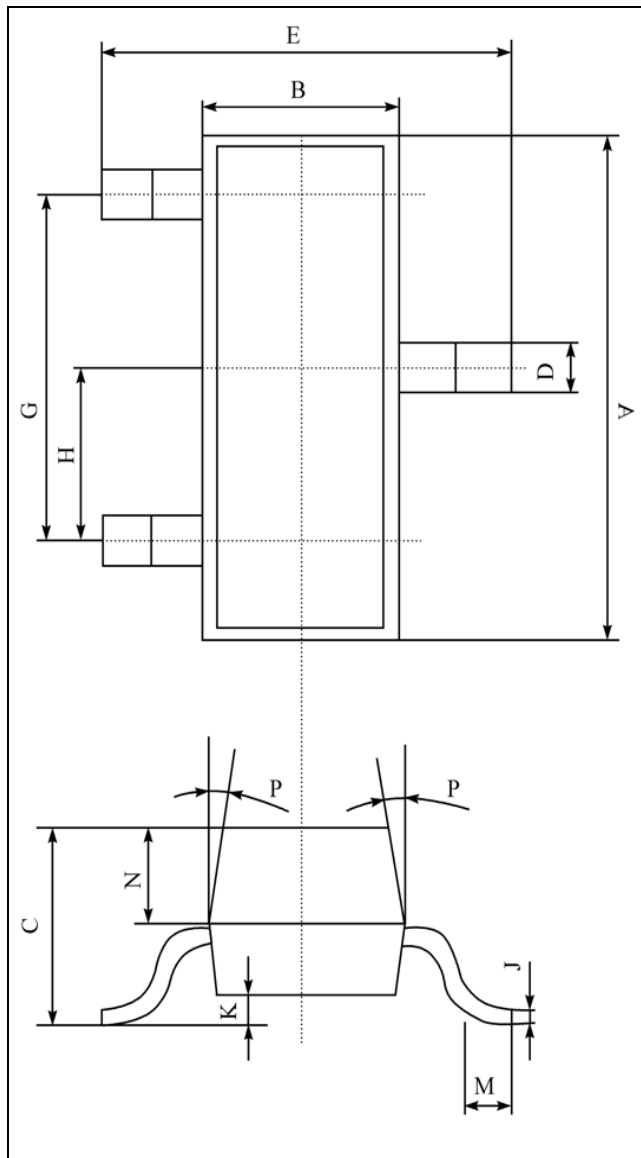


Figure 10: Source-drain diode forward

■ SOT-23 PACKAGE OUTLINE DIMENSIONS

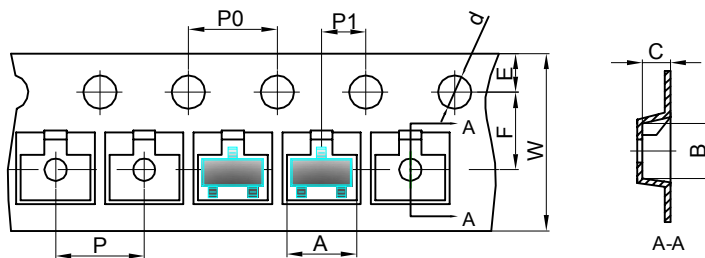
单位 (UNIT) : mm



序号	数值及公差
A	2.90±0.10
B	1.30±0.10
C	1.00±0.10
D	0.40±0.10
E	2.40±0.20
G	1.90±0.10
H	0.95±0.05
J	0.13±0.05
K	0.00-0.10
M	≥0.20
N	0.60±0.10
P	7±2°
Packing SOT-23 包装规格 SMD片式表面贴封装 包装方式: 载带卷盘包装 Tape & Reel, 3Kpcs/Reel 每卷数量3000只 (3Kpcs/Reel) 每盒数量45000只 (45Kpcs/BOX) 每箱数量180000只 (180Kpcs/Cartons)	

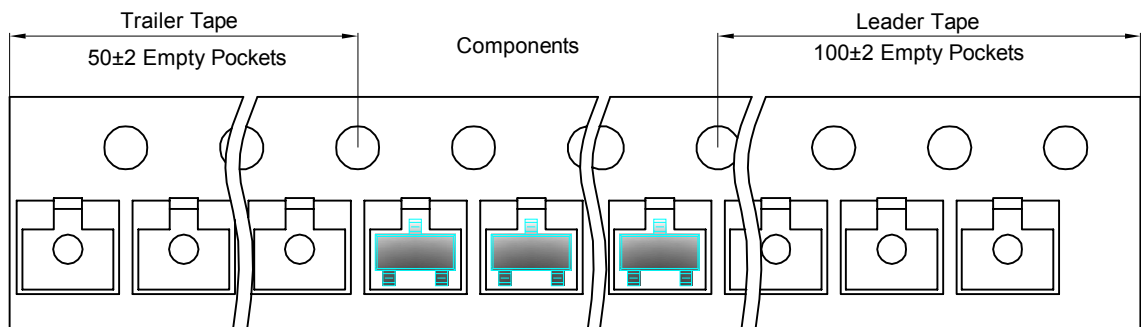
SOT-23 Tape and reel

SOT-23 Embossed Carrier Tape

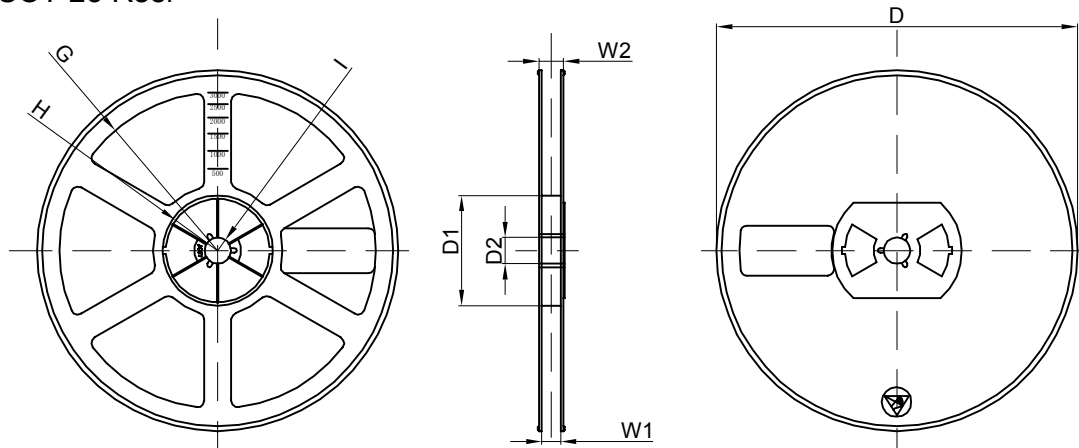


Dimensions are in millimeter										
Pkg type	A	B	C	d	E	F	P0	P	P1	W
SOT-23	3.15	2.77	1.22	Ø1.50	1.75	3.50	4.00	4.00	2.00	8.00

SOT-23 Tape Leader and Trailer



SOT-23 Reel



Dimensions are in millimeter							
Reel Option	D	D1	D2	G	H	I	W1
7"Dia	Ø178.00	54.40	13.00	R78.00	R25.60	R6.50	9.50

REEL	Reel Size	Box	Box Size(mm)	Carton	Carton Size(mm)	G.W.(kg)
3000 pcs	7 inch	45,000 pcs	192×192×193	180,000 pcs	404×404×214	