

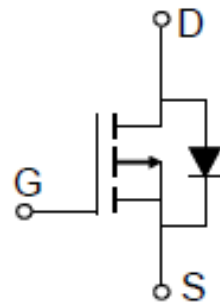
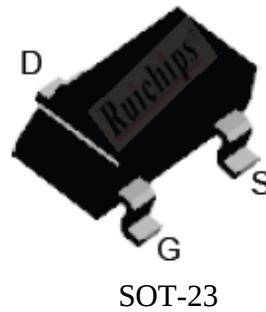
Features

- -20V/-3A,
 $R_{DS(ON)} = 80m\Omega$ (Typ.) @ $V_{GS} = -4.5V$
 $R_{DS(ON)} = 110m\Omega$ (Typ.) @ $V_{GS} = -2.5V$
- LOW $R_{DS(ON)}$
- Super High Dense Cell Design
- Reliable and Rugged
- Lead Free and Green Available

Applications

- Power Management
- Load Switch

Pin Description



P-Channel MOSFET

Absolute Maximum Ratings

Symbol	Parameter		Rating	Unit
Common Ratings (T _A =25°C Unless Otherwise Noted)				
V _{DSS}	Drain-Source Voltage		-20	V
V _{GSS}	Gate-Source Voltage		±12	
T _J	Maximum Junction Temperature		150	°C
T _{STG}	Storage Temperature Range		-55 to 150	°C
I _S	Diode Continuous Forward Current	T _A =25°C	-1.2	A
Mounted on Large Heat Sink				
I _{DP}	300μs Pulse Drain Current Tested	T _A =25°C	-12 ^①	A
I _D	Continuous Drain Current(V _{GS} =-4.5V)	T _A =25°C	-3	A
		T _A =70°C	-2.3	
P _D	Maximum Power Dissipation	T _A =25°C	1	W
		T _A =70°C	0.64	
R _{θJA} ^②	Thermal Resistance-Junction to Ambient		125	°C/W

Electrical Characteristics ($T_A=25^{\circ}\text{C}$ Unless Otherwise Noted)

Symbol	Parameter	Test Condition	RU20P3B			Unit
			Min.	Typ.	Max.	
Static Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _{DS} =-250μA	-20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-20V, V _{GS} =0V			-1	μA
		T _J =85°C			-30	
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _{DS} =-250μA	-0.5	-	-1	V
I _{GSS}	Gate Leakage Current	V _{GS} =±12V, V _{DS} =0V			±100	nA
R _{DS(ON)} ③	Drain-Source On-state Resistance	V _{GS} =-4.5V, I _{DS} =-3A		80	100	mΩ
		V _{GS} =-2.5V, I _{DS} =-2A		110	150	mΩ
Diode Characteristics						
V _{SD} ③	Diode Forward Voltage	I _{SD} =-1A, V _{GS} =0V			-1.2	V
t _{rr}	Reverse Recovery Time	I _{SD} =-3A, dI _{SD} /dt=100A/μs		13		ns
Q _{rr}	Reverse Recovery Charge			6		nC
Dynamic Characteristics ④						
R _G	Gate Resistance	V _{GS} =0V, V _{DS} =0V, F=1MHz		2		Ω
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, Frequency=1.0MHz		480		pF
C _{oss}	Output Capacitance			120		
C _{rss}	Reverse Transfer Capacitance			40		
t _{d(ON)}	Turn-on Delay Time	V _{DD} =-10V, R _L =3Ω, I _{DS} =-3A, V _{GEN} =-4.5V, R _G =6Ω		8		ns
t _r	Turn-on Rise Time			13		
t _{d(OFF)}	Turn-off Delay Time			25		
t _f	Turn-off Fall Time			12		
Gate Charge Characteristics ④						
Q _g	Total Gate Charge	V _{DS} =-16V, V _{GS} =-4.5V, I _{DS} =-3A		7		nC
Q _{gs}	Gate-Source Charge			1.5		
Q _{gd}	Gate-Drain Charge			2.5		

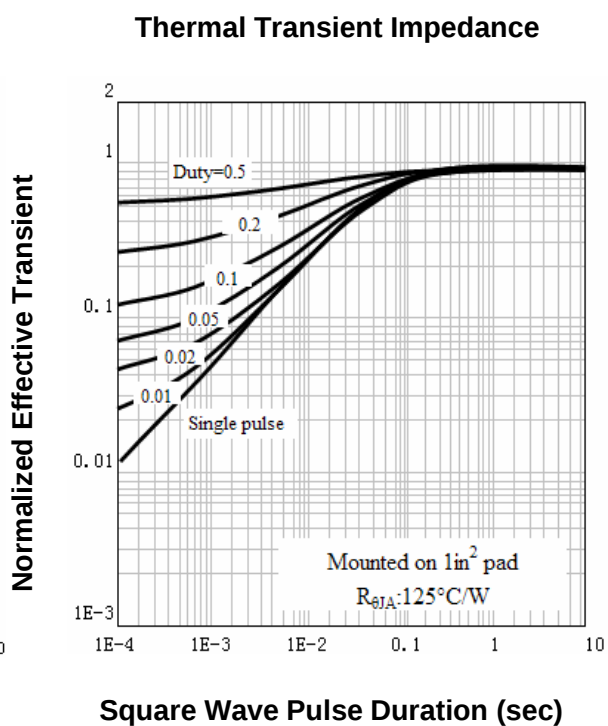
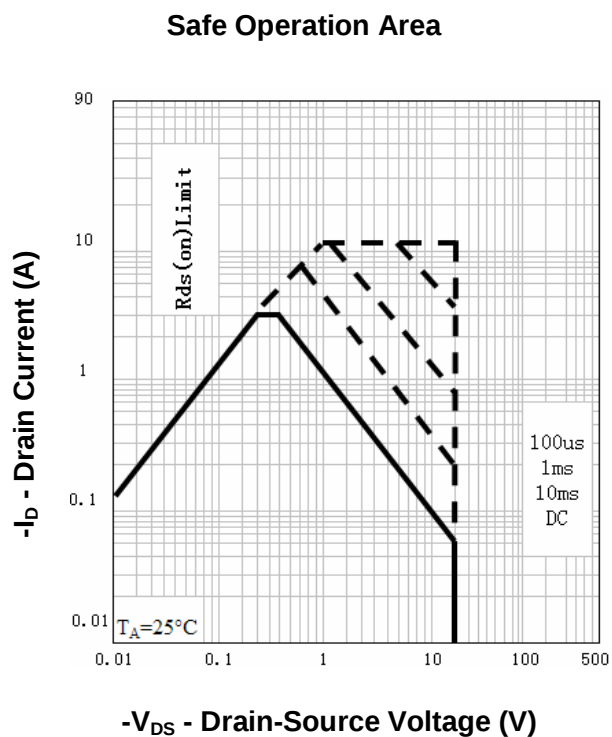
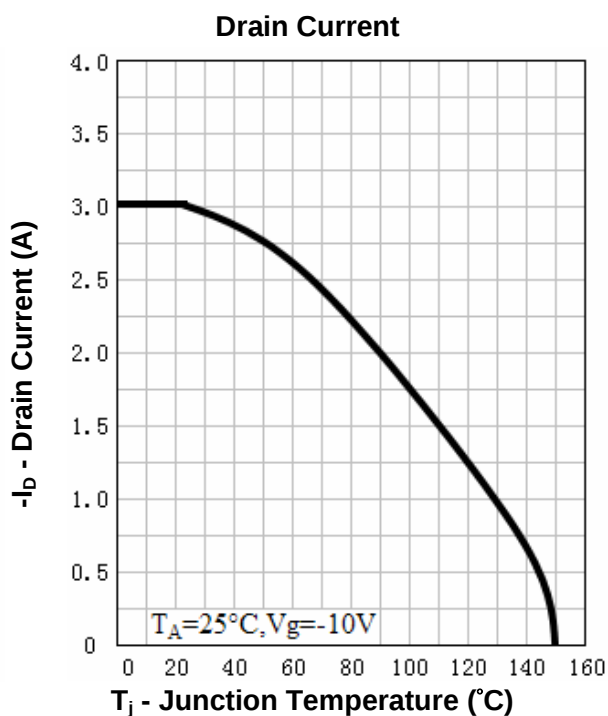
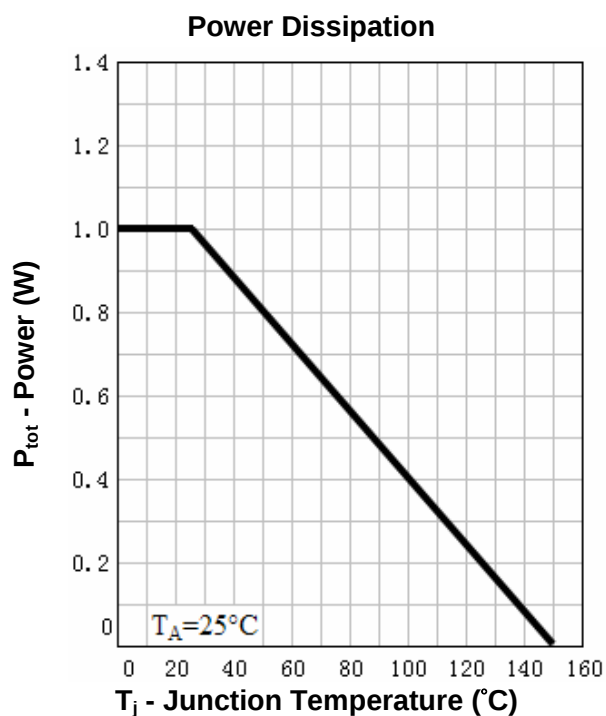
Notes: ① Pulse width limited by safe operating area.

② When mounted on 1 inch square copper board, $t \leq 10\text{sec}$. The value in any given application depends on the user's specific board design.

③ Pulse test ; Pulse width $\leq 300\mu s$, duty cycle $\leq 2\%$.

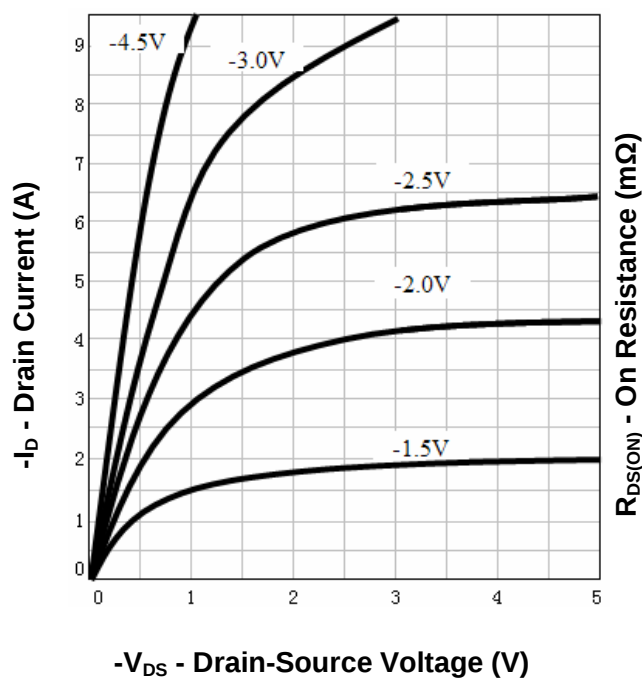
④ Guaranteed by design, not subject to production testing.

Typical Characteristics

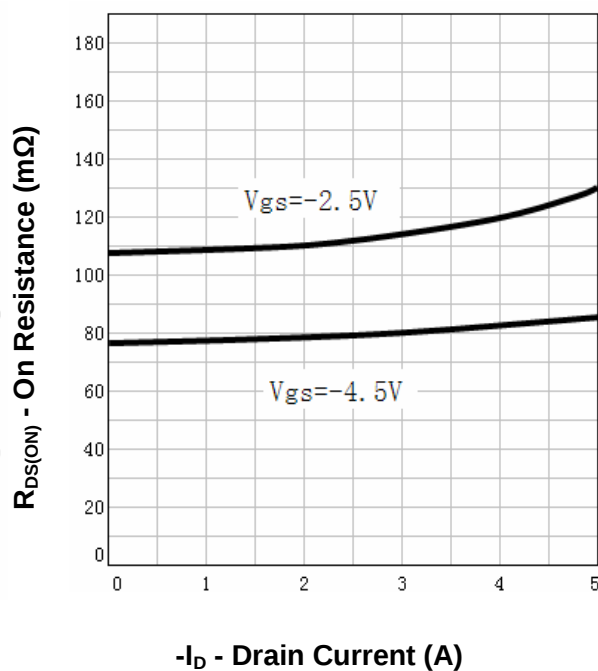


Typical Characteristics

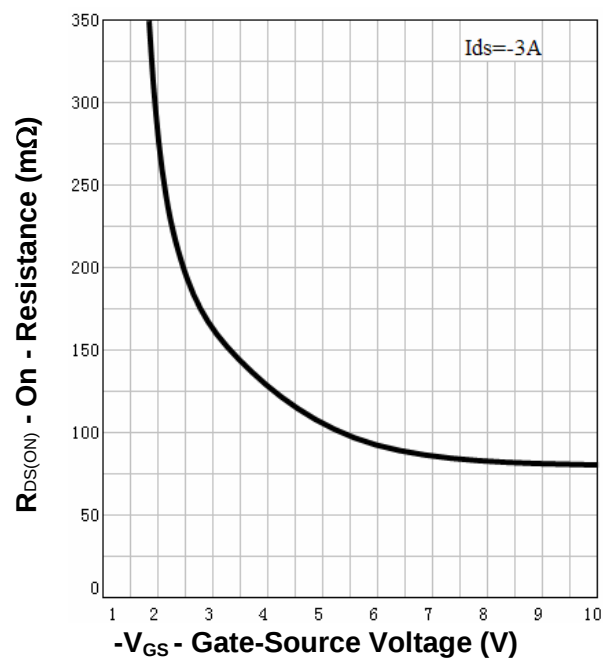
Output Characteristics



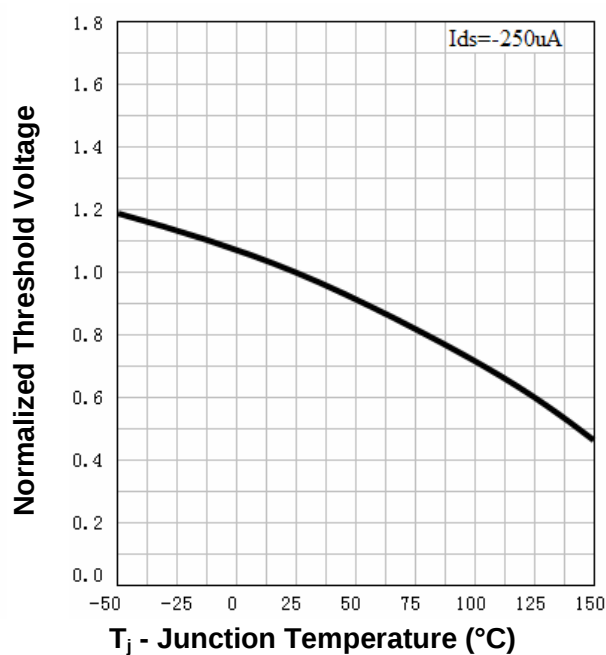
Drain-Source On Resistance



Drain-Source On Resistance

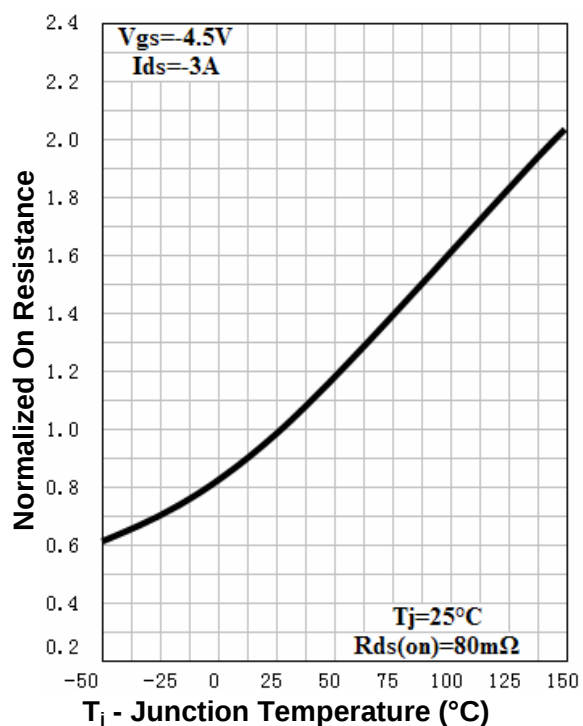


Gate Threshold Voltage

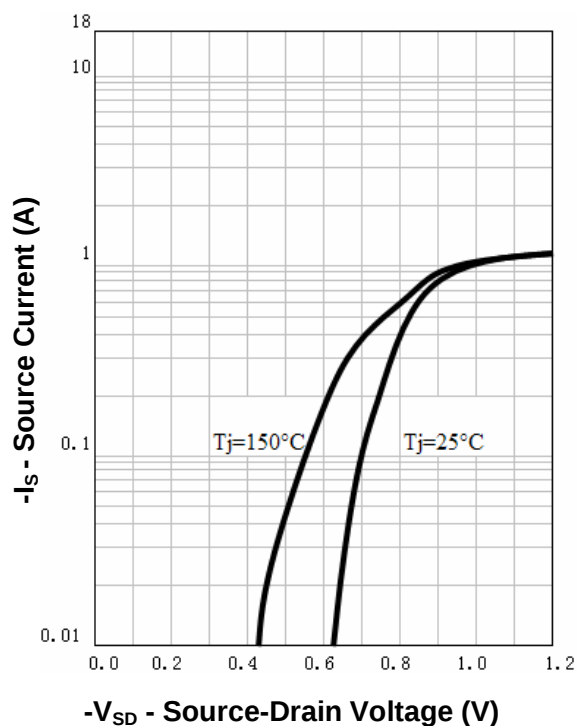


Typical Characteristics

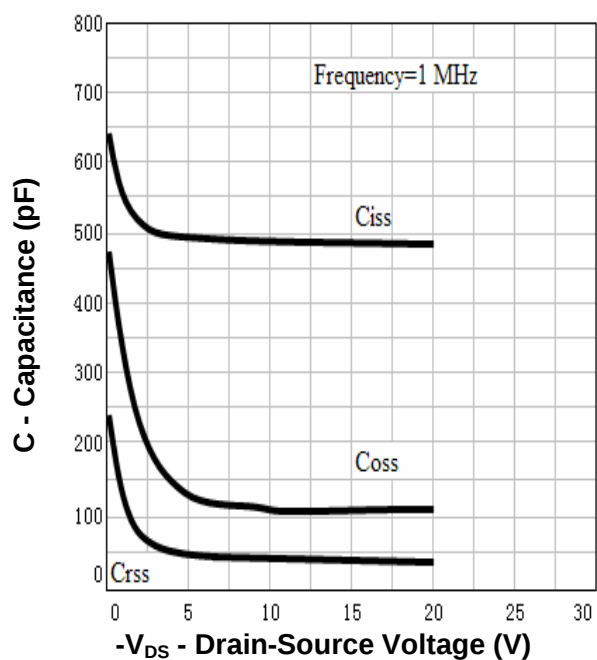
Drain-Source On Resistance



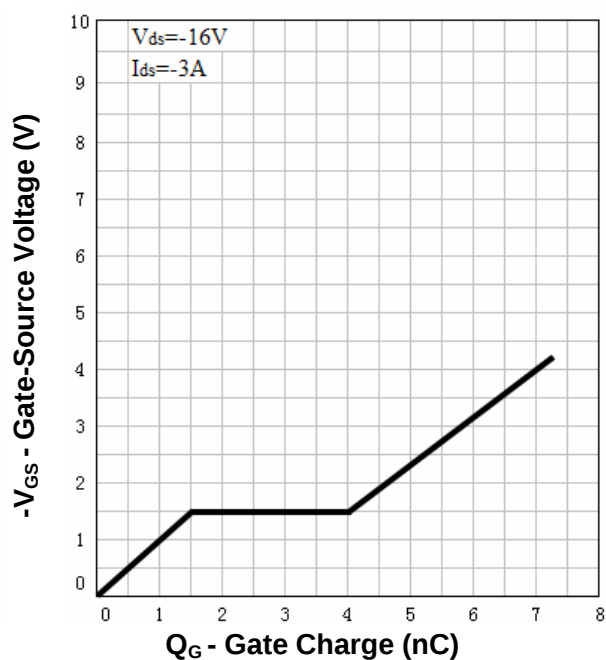
Source-Drain Diode Forward



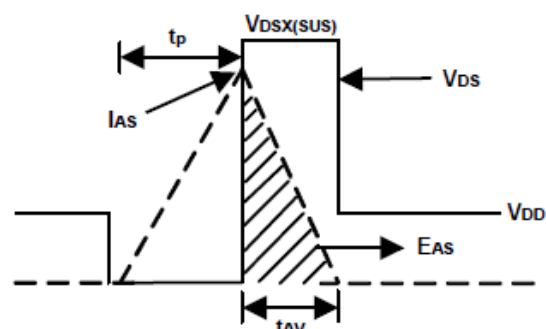
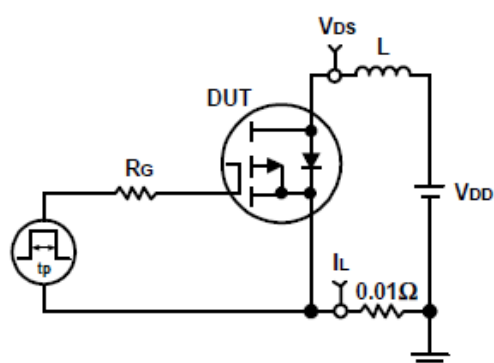
Capacitance



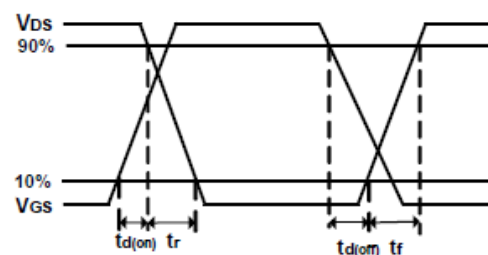
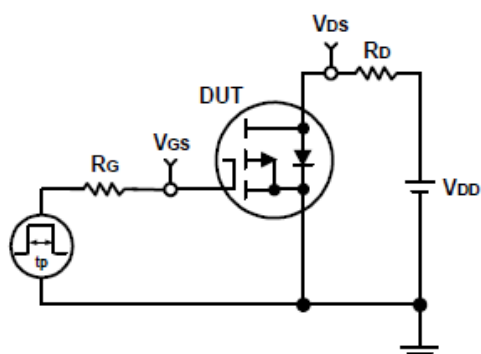
Gate Charge



Avalanche Test Circuit and Waveforms



Switching Time Test Circuit and Waveforms



Ordering and Marking Information

Device ^②	Marking ^①	Package	Packaging	Quantity	Reel Size	Tape width
RU20P3B	8XYWW	SOT-23	Tape&Reel	3000	7''	8mm
RU20P3B-G	8XYWW	SOT-23	Tape&Reel	3000	7''	8mm

① The following characters could be different and means:

X =Assembly site code

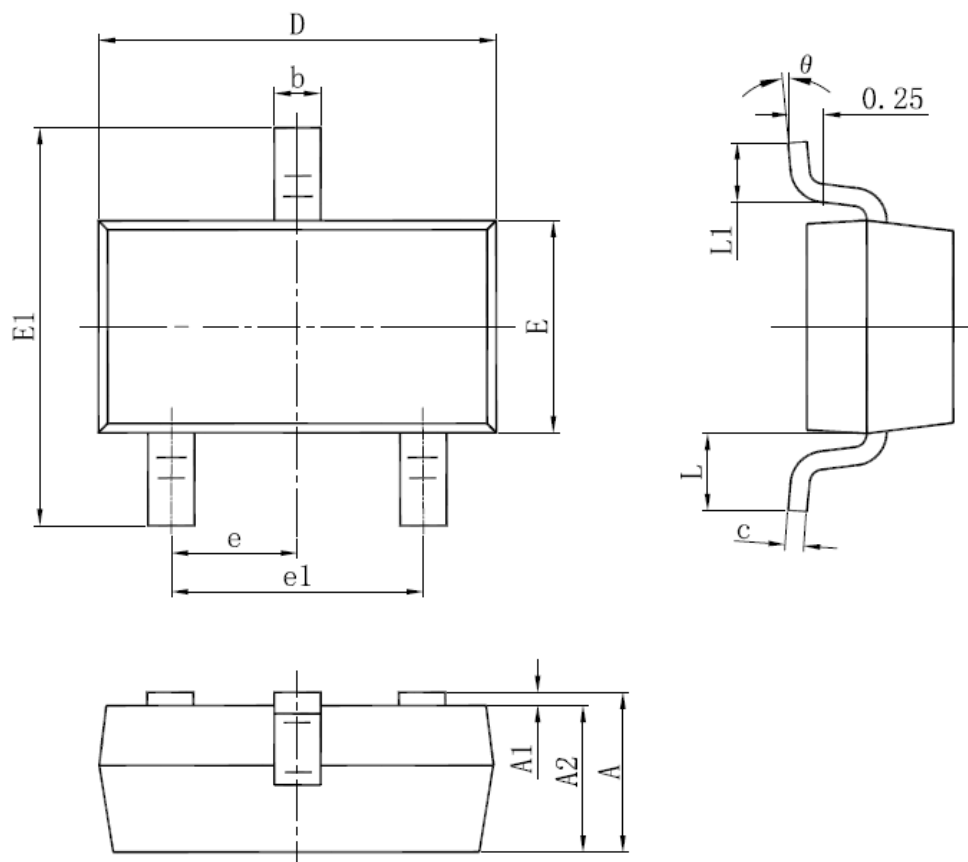
Y =Year

WW =Work Week

② Device end with -G means Green Product

Package Information

SOT-23



SYMBOL	MM		INCH		SYMBOL	MM		INCH	
	MIN	MAX	MIN	MAX		MIN	MAX	MIN	MAX
A	0.900	1.150	0.035	0.045	E1	2.250	2.550	0.089	0.100
A1	0.000	0.100	0.000	0.004	e	0.950 TYP.		0.037 TYP.	
A2	0.900	1.050	0.035	0.041	e1	1.800	2.000	0.071	0.079
b	0.300	0.500	0.012	0.020	L	0.550 REF.		0.022 REF.	
c	0.080	0.150	0.003	0.006	L1	0.300	0.500	0.012	0.020
D	2.800	3.000	0.110	0.118	θ	0°	8°	0°	8°
E	1.200	1.400	0.047	0.055					

ALL DIMENSIONS REFER TO JEDEC STANDARD
DO NOT INCLUDE MOLD FLASH OR PROTRUSIONS

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