

AP2310GN

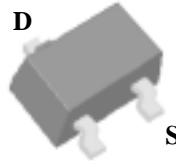
Pb Free Plating Product



Advanced Power Electronics Corp.

*N-CHANNEL ENHANCEMENT MODE
POWER MOSFET*

- ▼ Simple Drive Requirement
- ▼ Small Package Outline
- ▼ Surface Mount Device



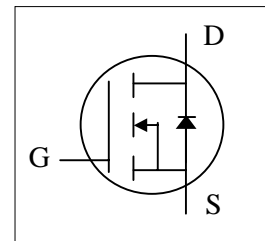
SOT-23 G

BV_{DSS}	60V
$R_{DS(ON)}$	90m Ω
I_D	3A

Description

Advanced Power MOSFETs utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device.

The SOT-23 package is universally used for all commercial-industrial applications.



Absolute Maximum Ratings

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	60	V
V_{GS}	Gate-Source Voltage	± 20	V
$I_D @ T_A = 25^\circ C$	Continuous Drain Current ³ , $V_{GS} @ 4.5V$	3	A
$I_D @ T_A = 70^\circ C$	Continuous Drain Current ³ , $V_{GS} @ 4.5V$	2.3	A
I_{DM}	Pulsed Drain Current ^{1,2}	10	A
$P_D @ T_A = 25^\circ C$	Total Power Dissipation	1.38	W
	Linear Derating Factor	0.01	W/ $^\circ C$
T_{STG}	Storage Temperature Range	-55 to 150	$^\circ C$
T_J	Operating Junction Temperature Range	-55 to 150	$^\circ C$

Thermal Data

Symbol	Parameter	Value	Unit
Rthj-a	Thermal Resistance Junction-ambient ³ Max.	90	$^\circ C/W$



AP2310GN

Electrical Characteristics @T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	60	-	-	V
ΔBV _{DSS} /ΔT _j	Breakdown Voltage Temperature Coefficient	Reference to 25°C, I _D =1mA	-	0.05	-	V/°C
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =10V, I _D =3A	-	-	90	mΩ
		V _{GS} =4.5V, I _D =2A	-	-	120	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	1	-	3	V
g _{fs}	Forward Transconductance	V _{DS} =5V, I _D =3A	-	5	-	S
I _{DSS}	Drain-Source Leakage Current (T _j =25°C)	V _{DS} =60V, V _{GS} =0V	-	-	10	uA
		V _{DS} =48V, V _{GS} =0V	-	-	25	uA
I _{GSS}	Gate-Source Leakage	V _{GS} =±20V	-	-	±100	nA
Q _g	Total Gate Charge ²	I _D =3A	-	6	10	nC
Q _{gs}	Gate-Source Charge	V _{DS} =48V	-	1.6	-	nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	3	-	nC
t _{d(on)}	Turn-on Delay Time ²	V _{DS} =30V	-	6	-	ns
t _r	Rise Time	I _D =1A	-	5	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω, V _{GS} =10V	-	16	-	ns
t _f	Fall Time	R _D =30Ω	-	3	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	490	780	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	55	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	40	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =1.2A, V _{GS} =0V	-	-	1.2	V
t _{rr}	Reverse Recovery Time	I _S =3A, V _{GS} =0V,	-	25	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	26	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse width ≤300us , duty cycle ≤2%.
- 3.Surface mounted on 1 in² copper pad of FR4 board ; 270°C/W when mounted on min. copper pad.

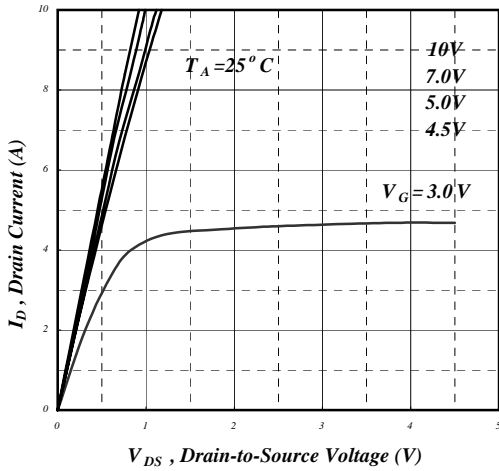


Fig 1. Typical Output Characteristics

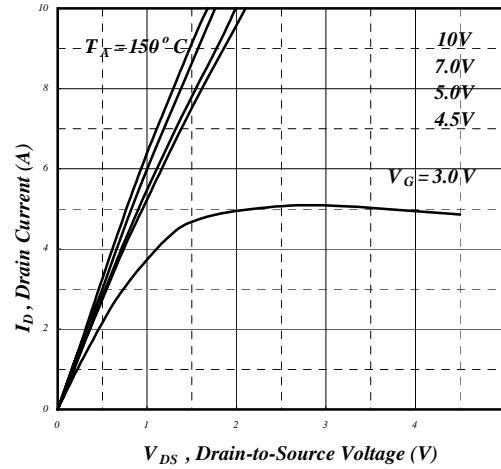


Fig 2. Typical Output Characteristics

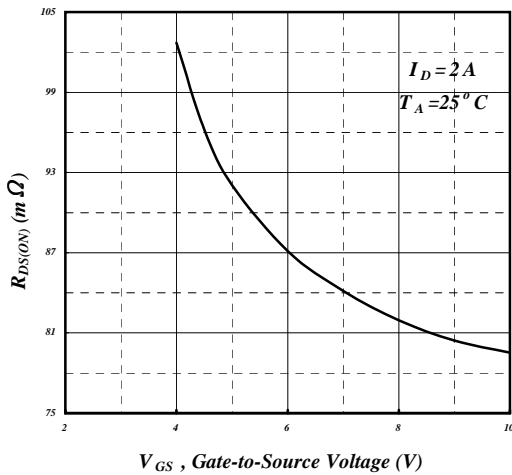


Fig 3. On-Resistance v.s. Gate Voltage

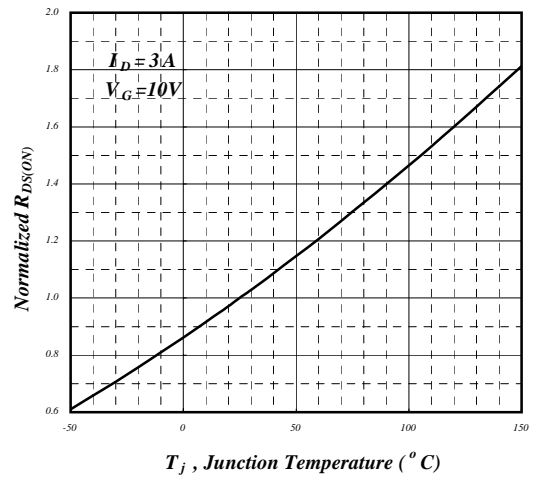


Fig 4. Normalized On-Resistance v.s. Junction Temperature

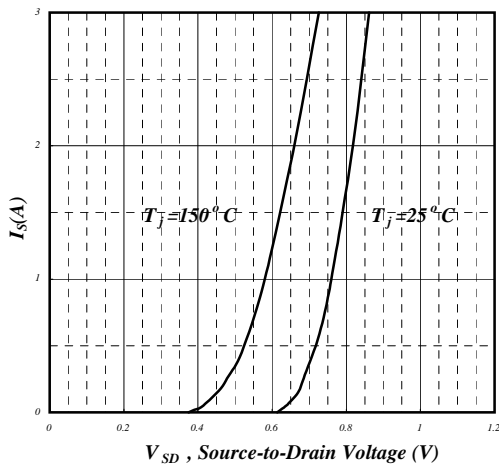


Fig 5. Forward Characteristic of Reverse Diode

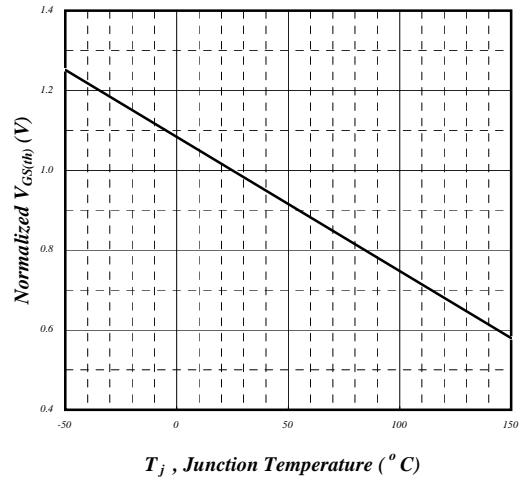


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

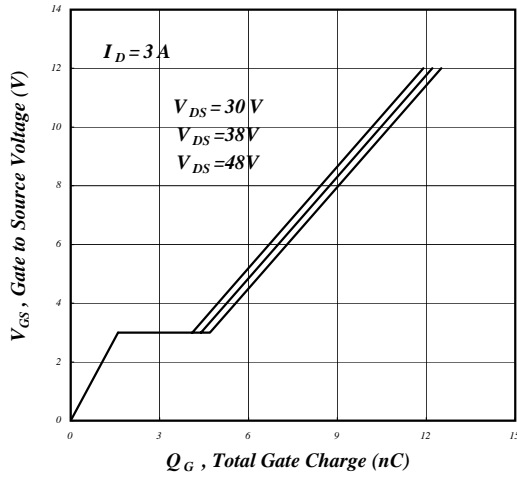


Fig 7. Gate Charge Characteristics

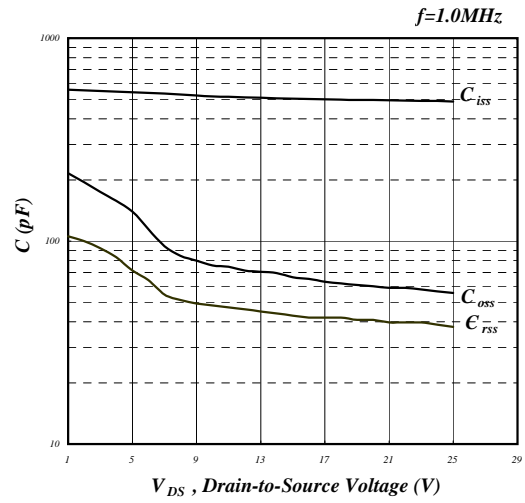


Fig 8. Typical Capacitance Characteristics

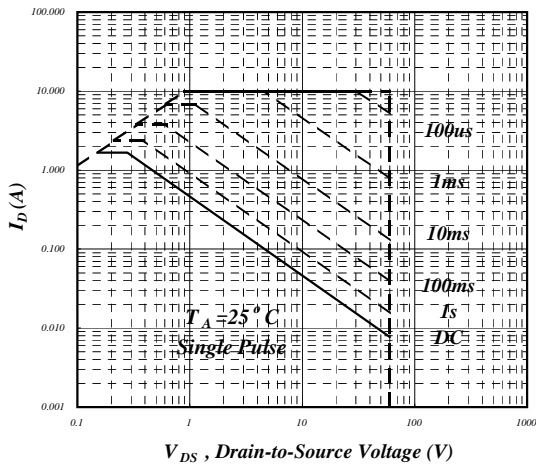


Fig 9. Maximum Safe Operating Area

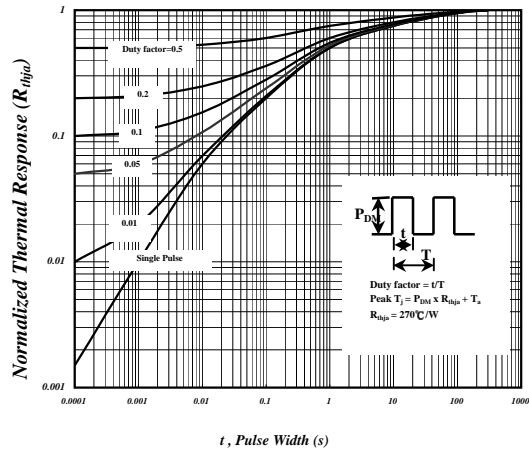


Fig 10. Effective Transient Thermal Impedance

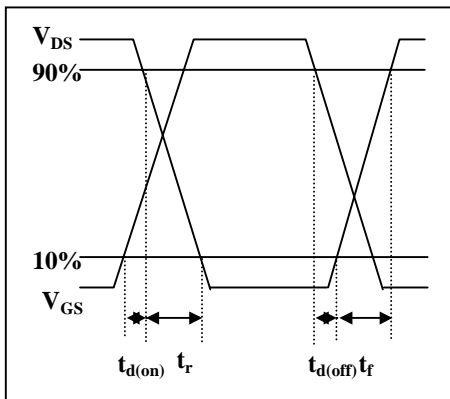


Fig 11. Switching Time Waveform

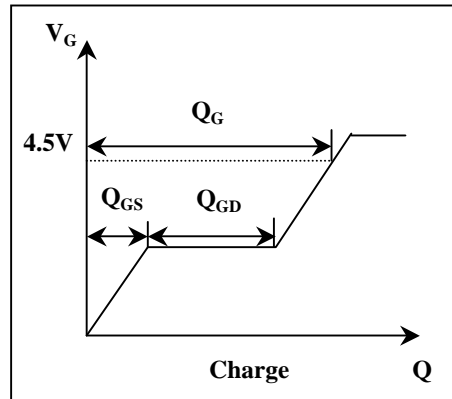
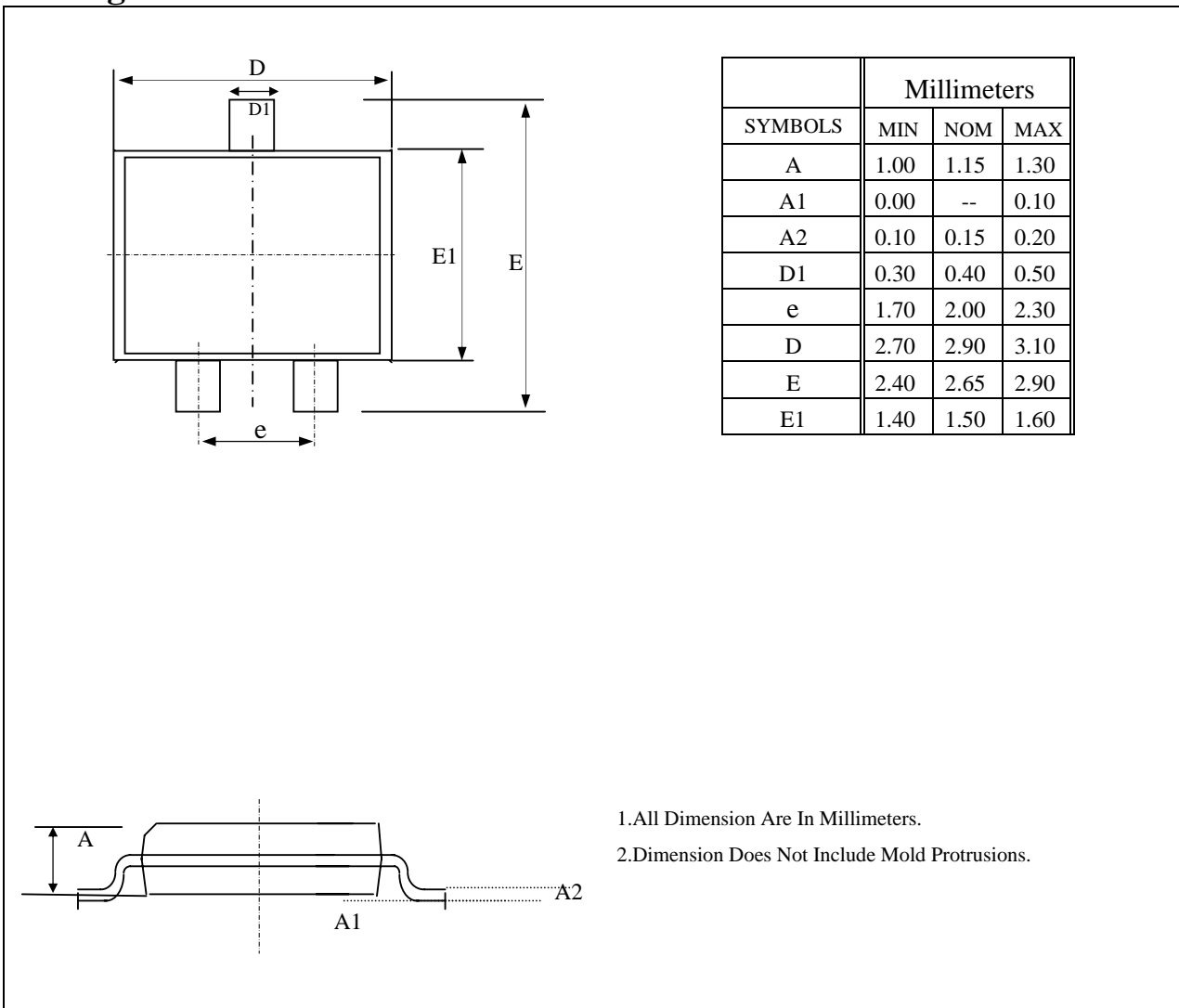
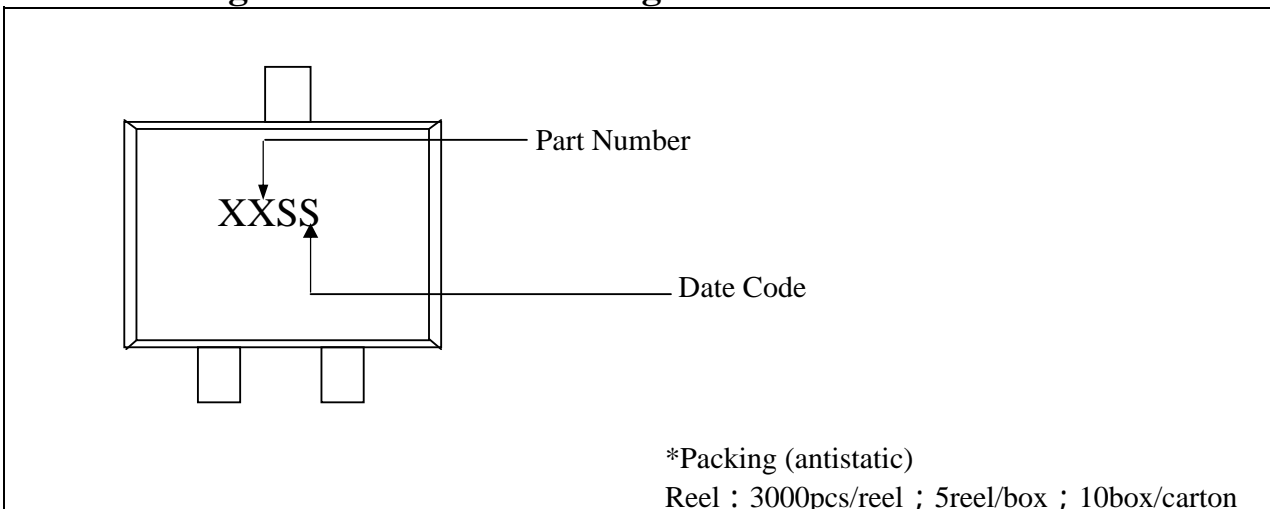


Fig 12. Gate Charge Waveform

Package Outline : SOT-23



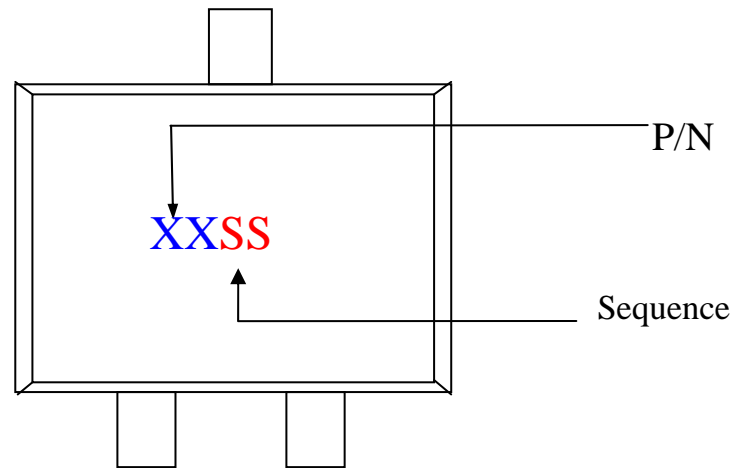
Part Marking Information & Packing : SOT-23





富鼎先進電子股份有限公司
ADVANCED POWER ELECTRONICS CORP.

SOT-23 Series D/C Description



(1) “XX” is the P/N code (see the P/N list)

(2) “ SS ” is the Sequence: “ 1 9 ” and “ A Z ”

2-1. "A~Z" showed on 3rd position --> week 1 ~ week 26,

2-2 "A~Z" showed on 4th position --> week 27 ~ week 52.

(3) Add the under line in first Alphabet for Pb-free Product.

第三碼	對應週別	第四碼	對應週別
A	1	A	27
B	2	B	28
C	3	C	29
D	4	D	30
E	5	E	31
F	6	F	32
G	7	G	33
H	8	H	34
I	9	I	35
J	10	J	36
K	11	K	37
L	12	L	38
M	13	M	39
N	14	N	40
O	15	O	41
P	16	P	42
Q	17	Q	43
R	18	R	44
S	19	S	45
T	20	T	46
U	21	U	47
V	22	V	48
W	23	W	49
X	24	X	50
Y	25	Y	51
Z	26	Z	52

SOT-23 Series Year Code

<div data-bbox="421 389 703 549" style="border: 1px solid black; padding: 5px; text-align: center;">X X S S</div>	2004,2008,2012	<div data-bbox="1200 383 1482 542" style="border: 1px solid black; padding: 5px; text-align: center;">X X S S</div>	2005,2009,2013
<div data-bbox="412 619 694 778" style="border: 1px solid black; padding: 5px; text-align: center;">X X S S</div>	2006,2010,2014	<div data-bbox="1218 619 1500 778" style="border: 1px solid black; padding: 5px; text-align: center;">X X S S</div>	2007,2011,2015

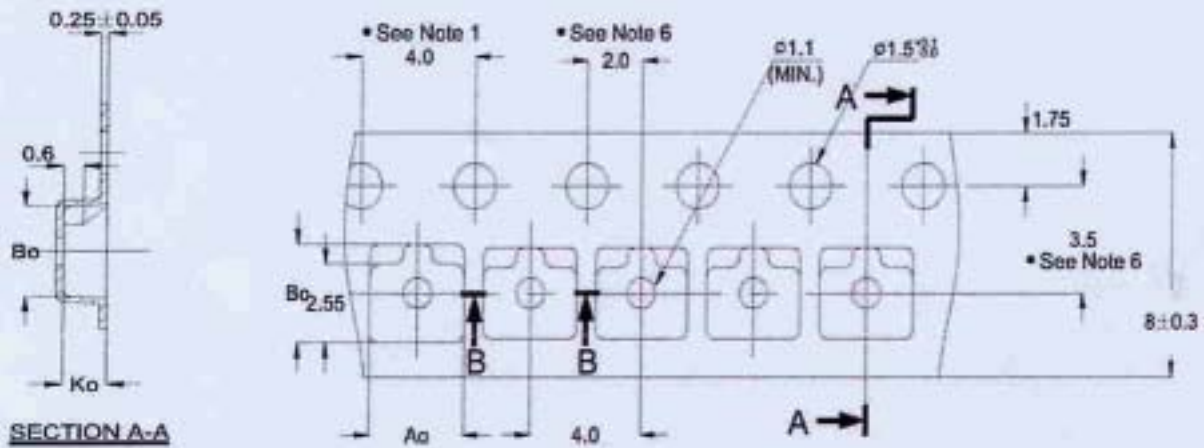
4 years in one cycle

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包裝規範

附圖四：

SOT-23 Tape & Reel Information



SECTION A-A

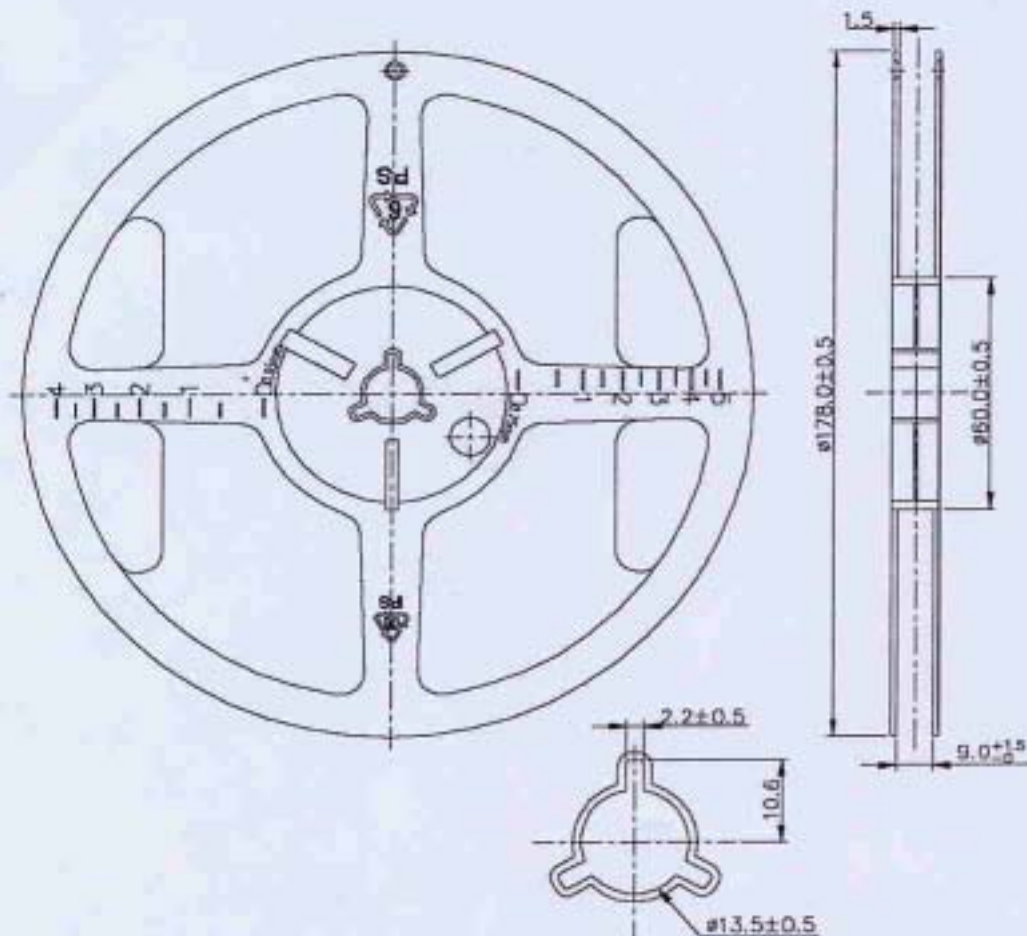


SECTION B-B

Aa=3.30mm
Bo=3.20mm
Ko=1.47mm

Notes:

1. 10 sprocket hole pitch cumulative tolerance ± 0.2
2. Camber not to exceed 1mm in 100mm.
3. Material: Black Advantek Polystyrene.
4. Aa and Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ka measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.



文件編號：QWMP-7801

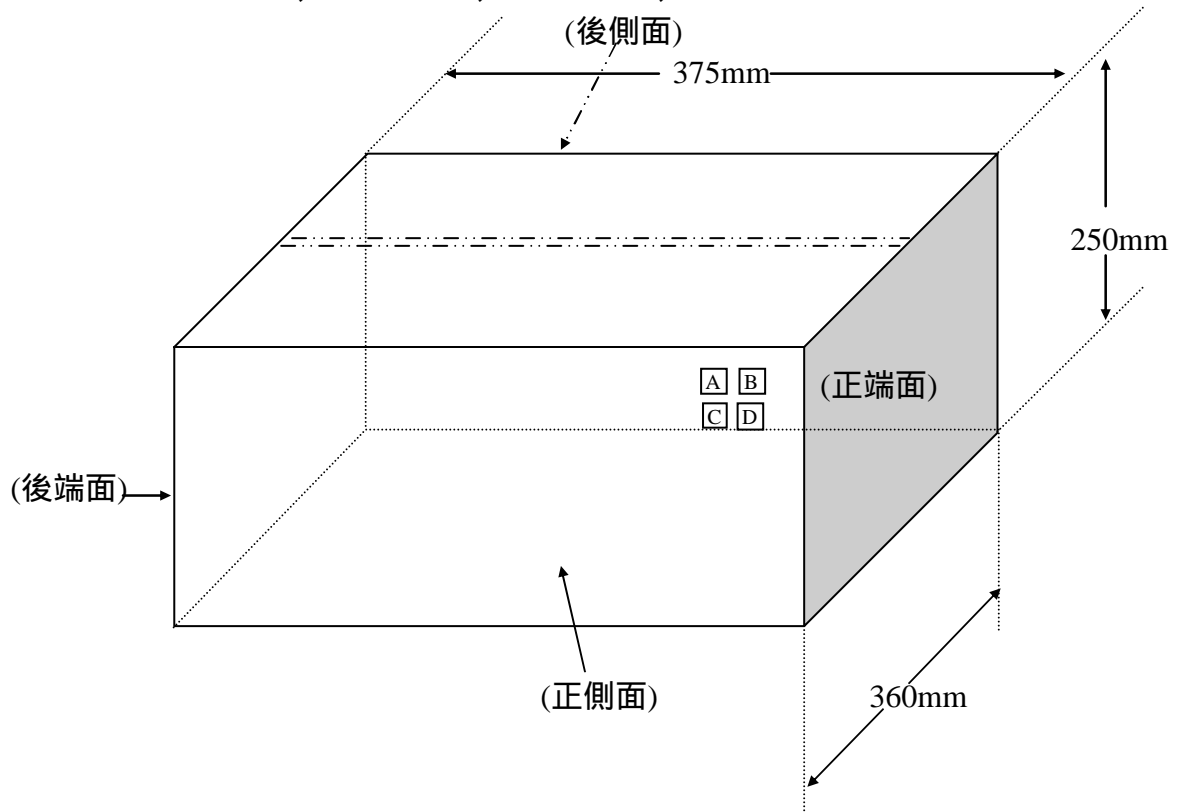
版別：7

頁碼：11

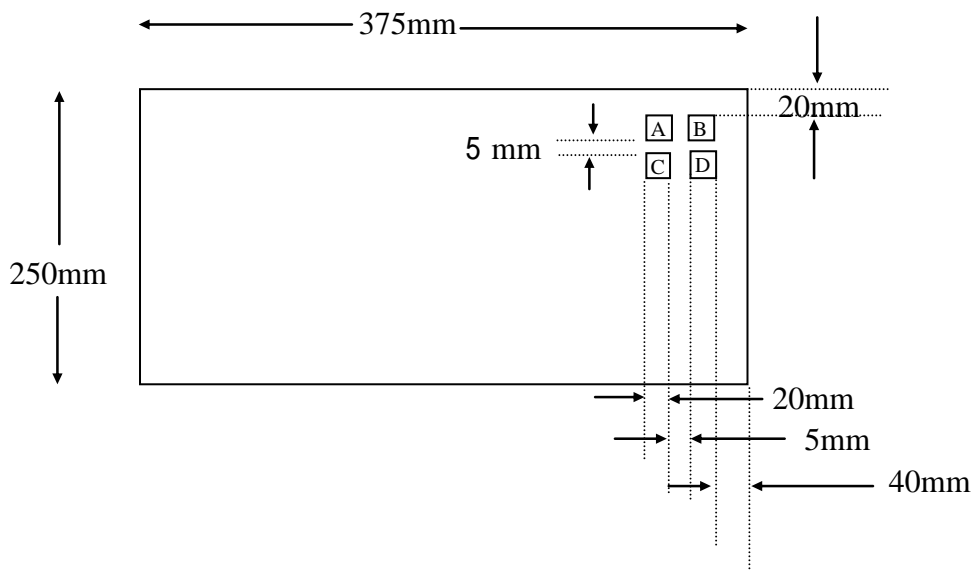
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包裝規範

附件二： TO-252、TO-263、SOT-23、SOT-89 & SOT-223



(一)正側面及後側面

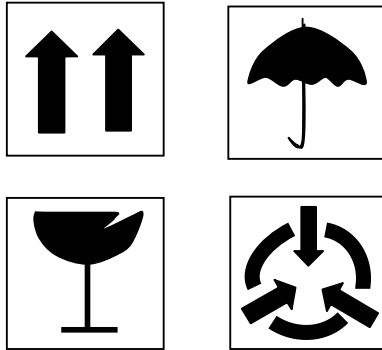


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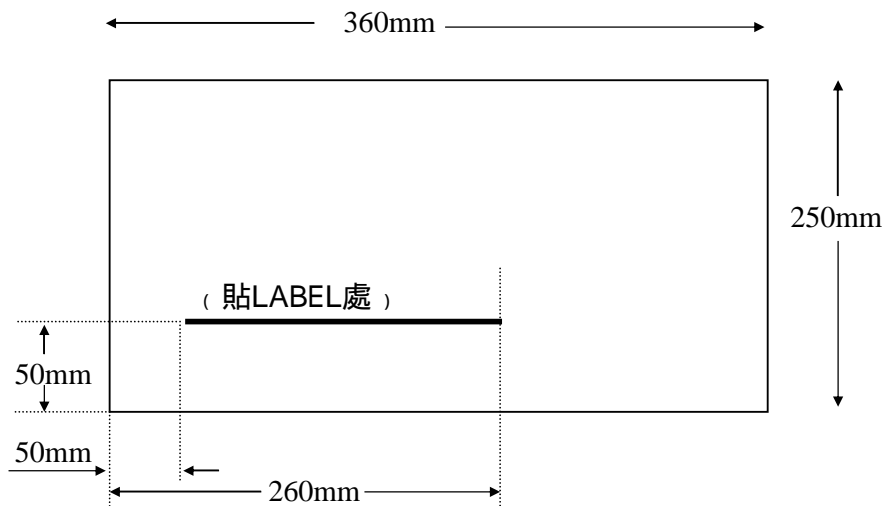
包裝規範

1.A、B、C、D為警告標誌，各20mm*20mm

(一) 圖案如下：TO-252、TO-263、SOT-23、SOT-89 & SOT-223



(二) 正端面



1.LABEL 下緣與標線貼齊

2.標線尺寸1.5mm*210mm



Pb-free /PbProduct Identify

Carton/Inner Box

Pb-free Product



G.P PASS

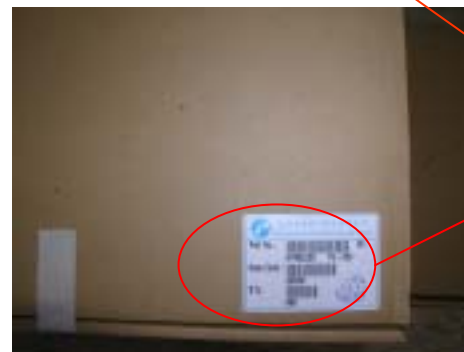
Green Label



Pb Product



Blue label





Pb-free /PbPorduct Identify

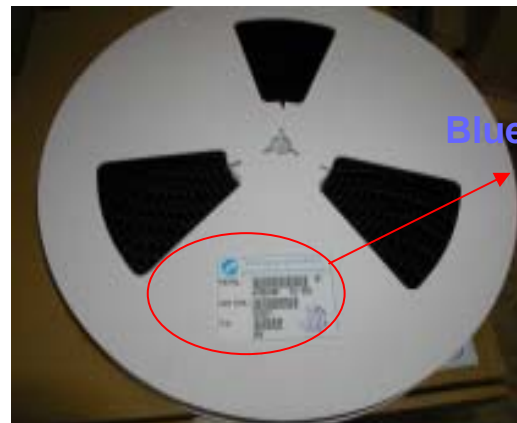
Pb-free Product

Reel

Pb Product



Green Label



Blue label