50V P-CHANNEL Enhancement Mode MOSFET

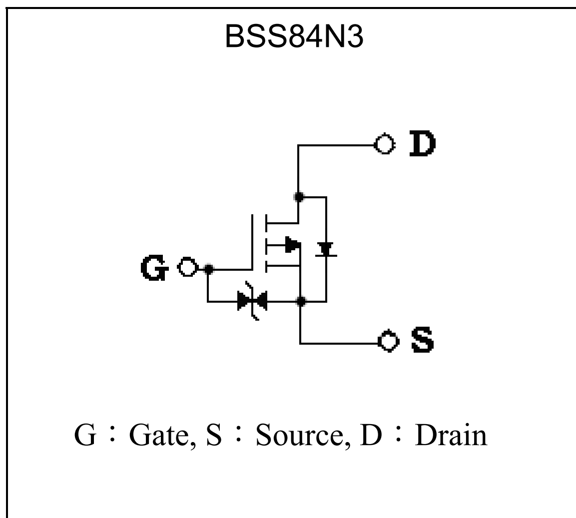
BSS84N3

BV_{DSS}	-50V
I_D @ T_A=25°C, V_{GS}=-5V	-130mA
R_{DSON}@V_{GS}=-5V, I_D=-100mA	6Ω(typ)

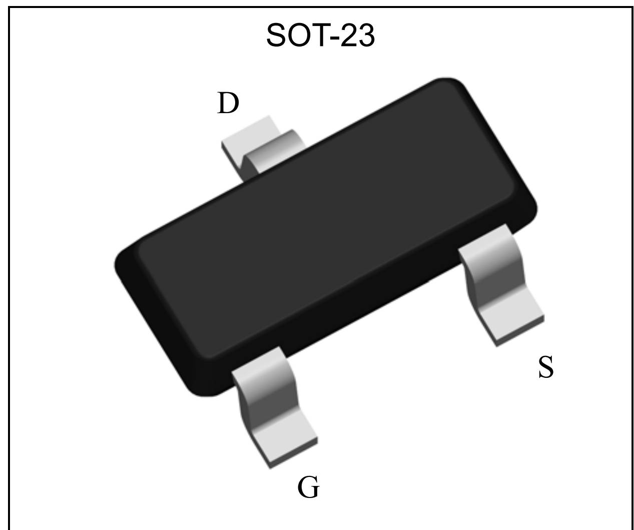
Features

- Low gate charge
- Excellent thermal and electrical capabilities
- Pb-free package

Equivalent Circuit

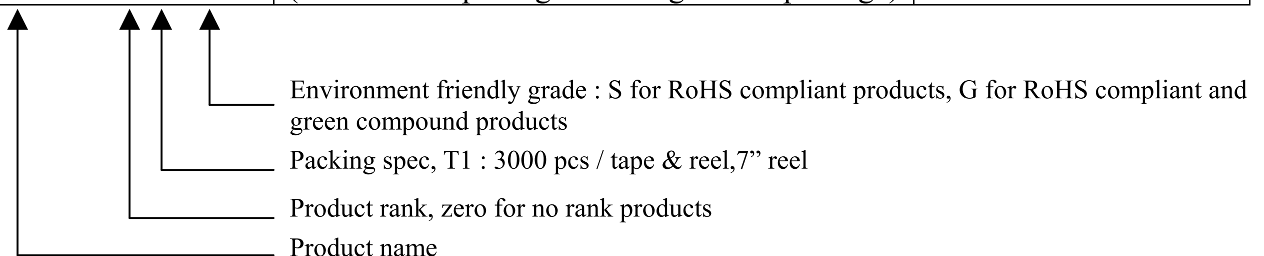


Outline



Ordering Information

Device	Package	Shipping
BSS84N3-0-T1-G	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel



Absolute Maximum Ratings (Tj=25°C, unless otherwise noted)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	-50	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current @ T_A=25°C, V_{GS}=-5V	I_D	-130	mA
Pulsed Drain Current (Note 1)	I_{DM}	-520	
Maximum Power Dissipation @ T_A=25℃	P_D	225	mW
Thermal Resistance, Junction-to-Ambient	$R_{th,ja}$	556	°C/W
Maximum Lead Temperature for Soldering Purpose, 10 s	T_L	260	°C
Operating Junction and Storage Temperature	Tj, Tstg	-55~+150	

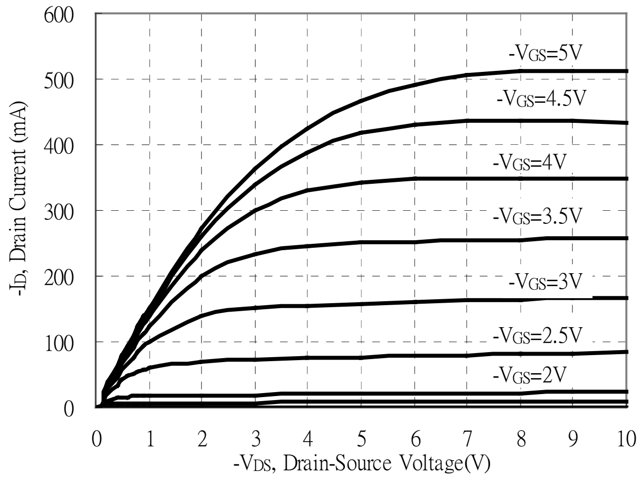
Note : 1. Pulse width≤ 10μs, duty cycle≤2%.

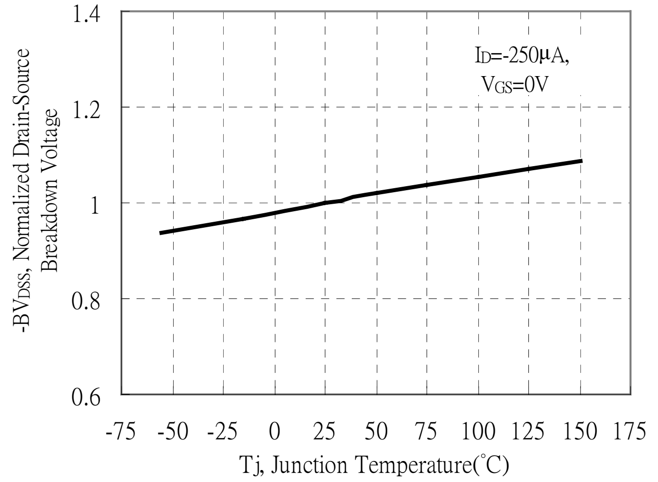
Electrical Characteristics (Tj=25°C, unless otherwise specified)

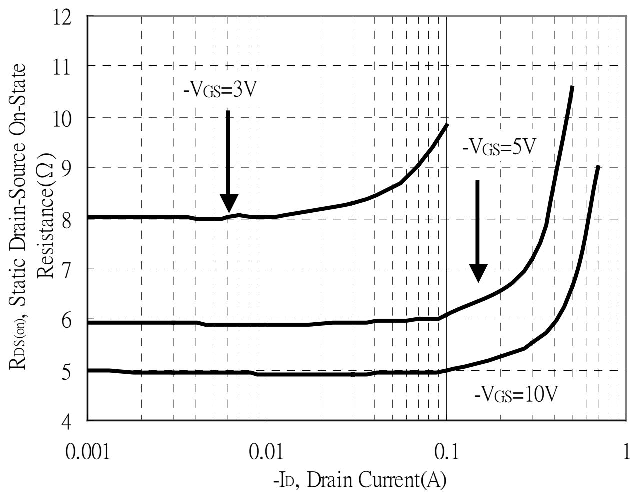
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	-50	-	-	V	V_{GS}=0V, I_D=-250μA
$V_{GS(th)}$	-0.8	-1.4	-2		V_{DS}=V_{GS}, I_D=-1mA
G_{FS}	50	-	-	mS	V_{DS}=-25V, I_D=-100mA
I_{GSS}	-	-	±10	μA	V_{GS}=±20V, V_{DS}=0V
I_{DSS}	-	-	-0.1	μA	V_{DS}=-25V, V_{GS}=0V
	-	-	-1		V_{DS}=-50V, V_{GS}=0V
	-	-	-25		V_{DS}=-50V, V_{GS}=0V, Tj=125°C
*$R_{DS(ON)}$	-	6	10	Ω	V_{GS}=-5V, I_D=-100mA
Dynamic					
Ciss	-	25	-	pF	V_{DS}=-5V, V_{GS}=0V, f=1MHz
Coss	-	7	-		
Crss	-	2	-		
*$t_{d(ON)}$	-	2.5	-	ns	V_{DS}=-15V, I_D=-100mA, V_{GS}=-5V, R_G=3.3Ω
*t_r	-	2	-		
*$t_{d(OFF)}$	-	7.3	-		
*t_f	-	3	-		
*Qg	-	1.2	-	nC	V_{DS}=-40V, I_D=-500mA, V_{GS}=-5V
Source-Drain Diode					
*I_S	-	-	-130	mA	
*I_{SM}	-	-	-520		
*V_{SD}	-	-0.85	-1.2	V	V_{GS}=0V, I_S=-130mA

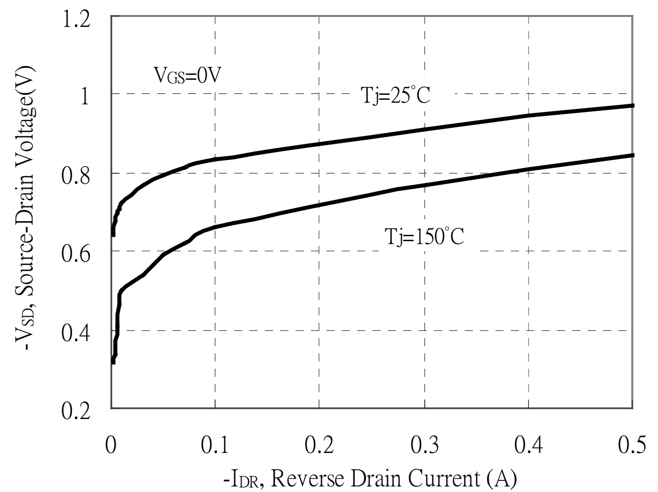
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

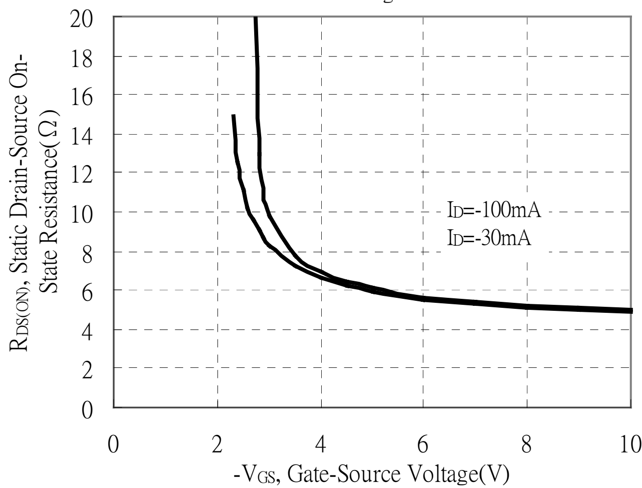
Typical Characteristics

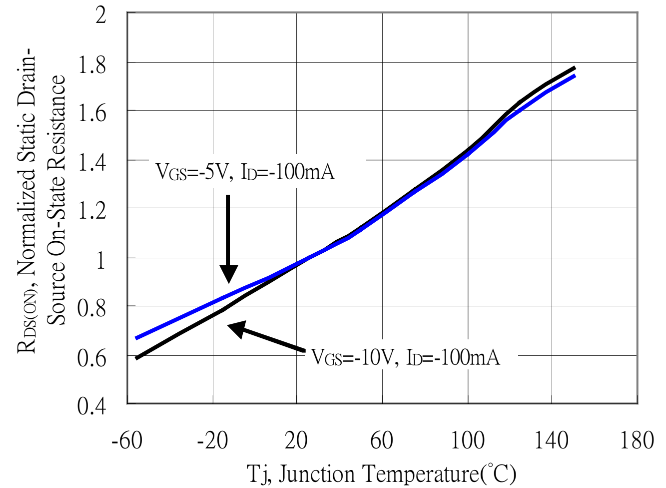




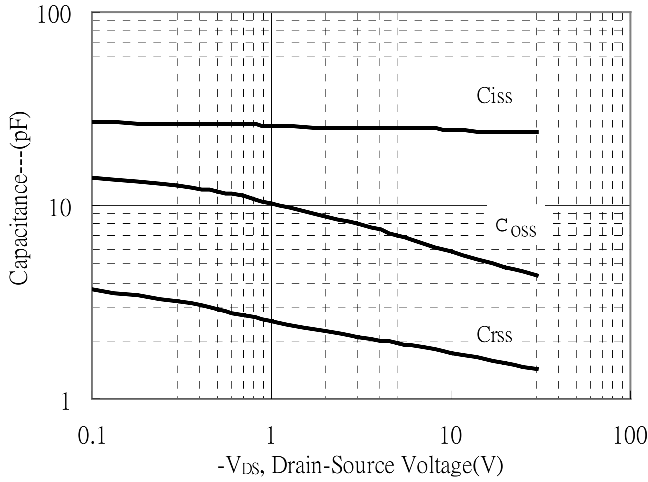


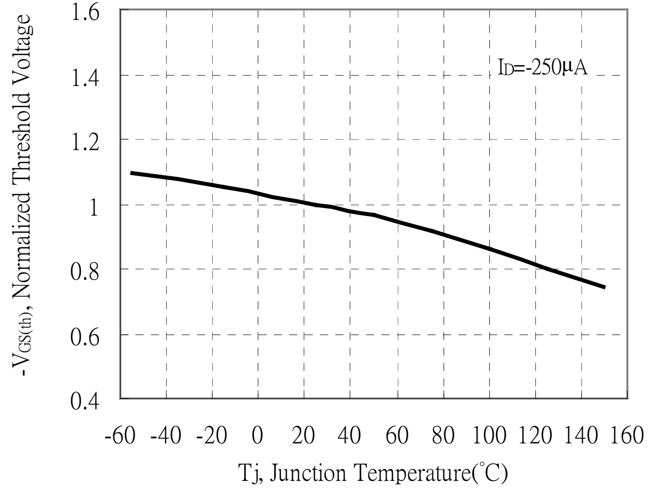


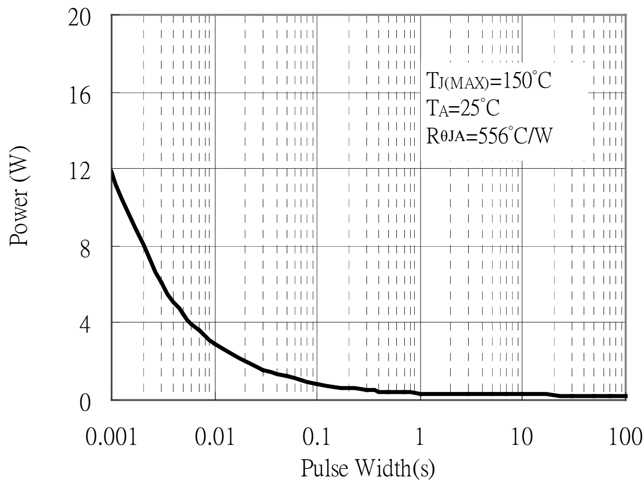


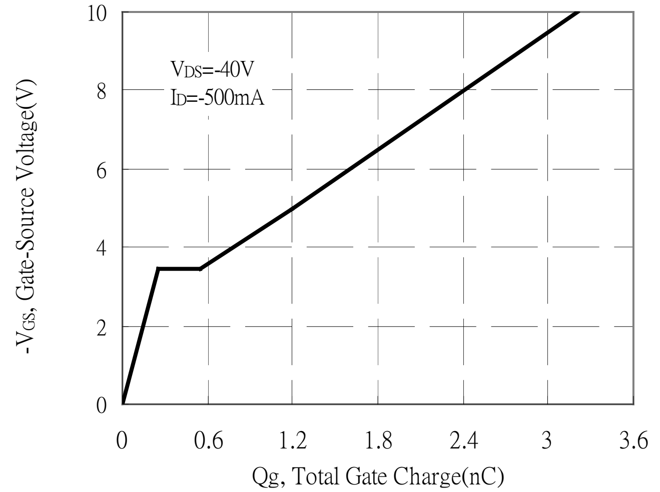


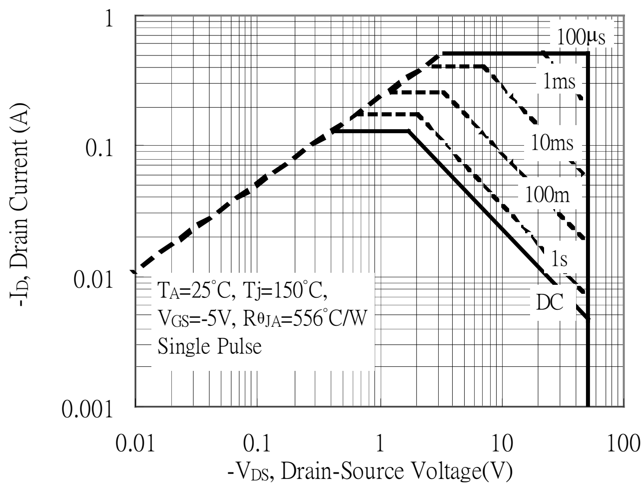
Typical Characteristics(Cont.)

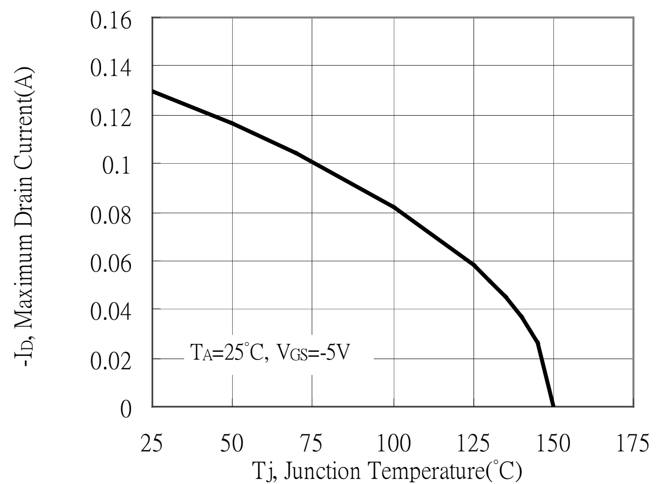




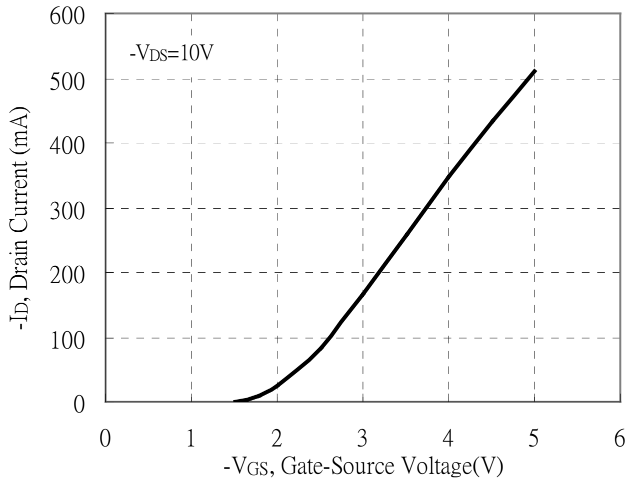


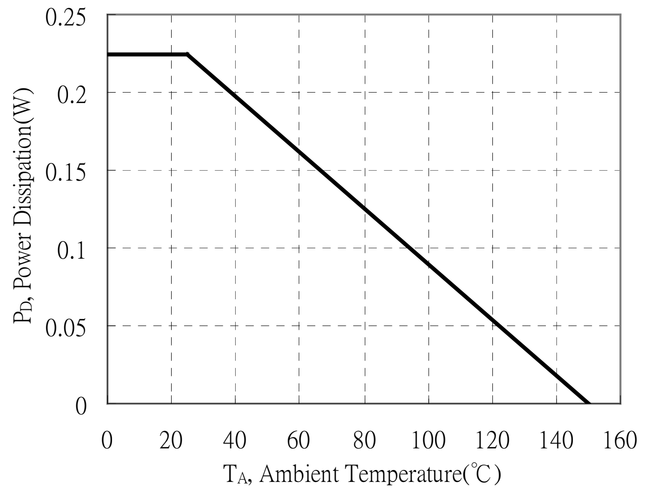


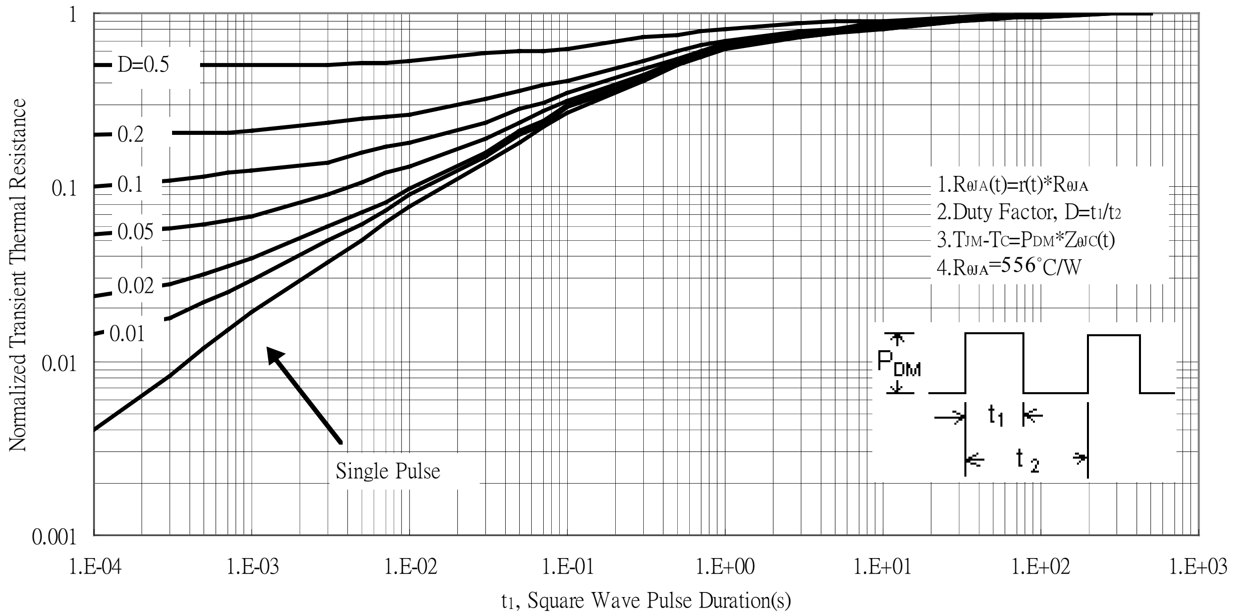




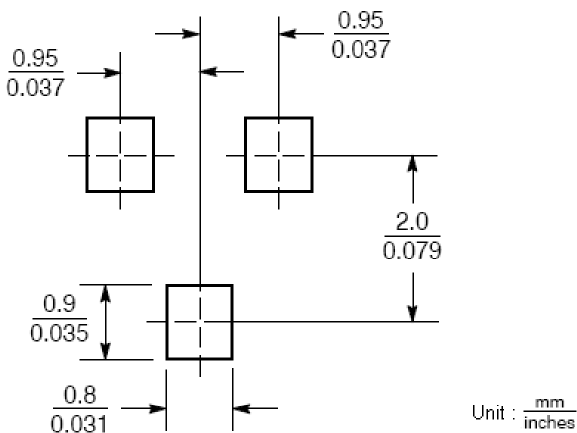
Typical Characteristics(Cont.)



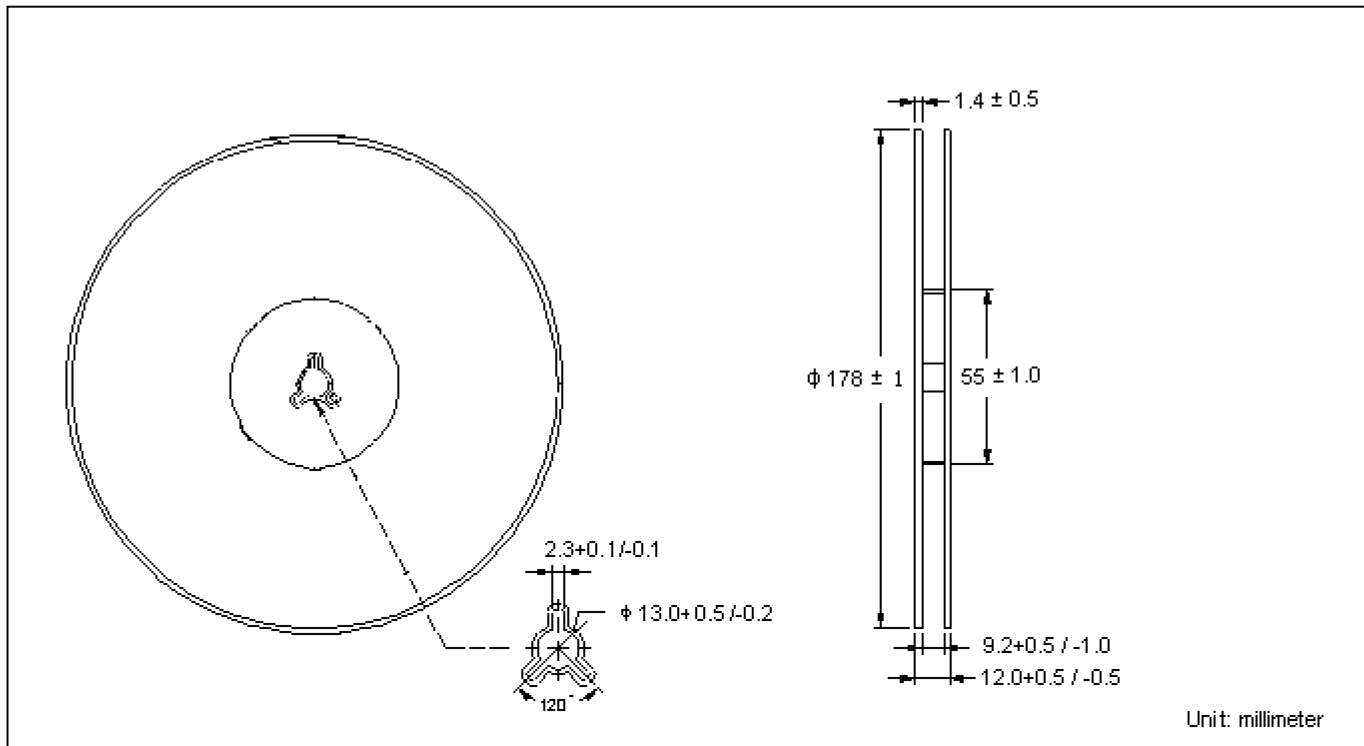




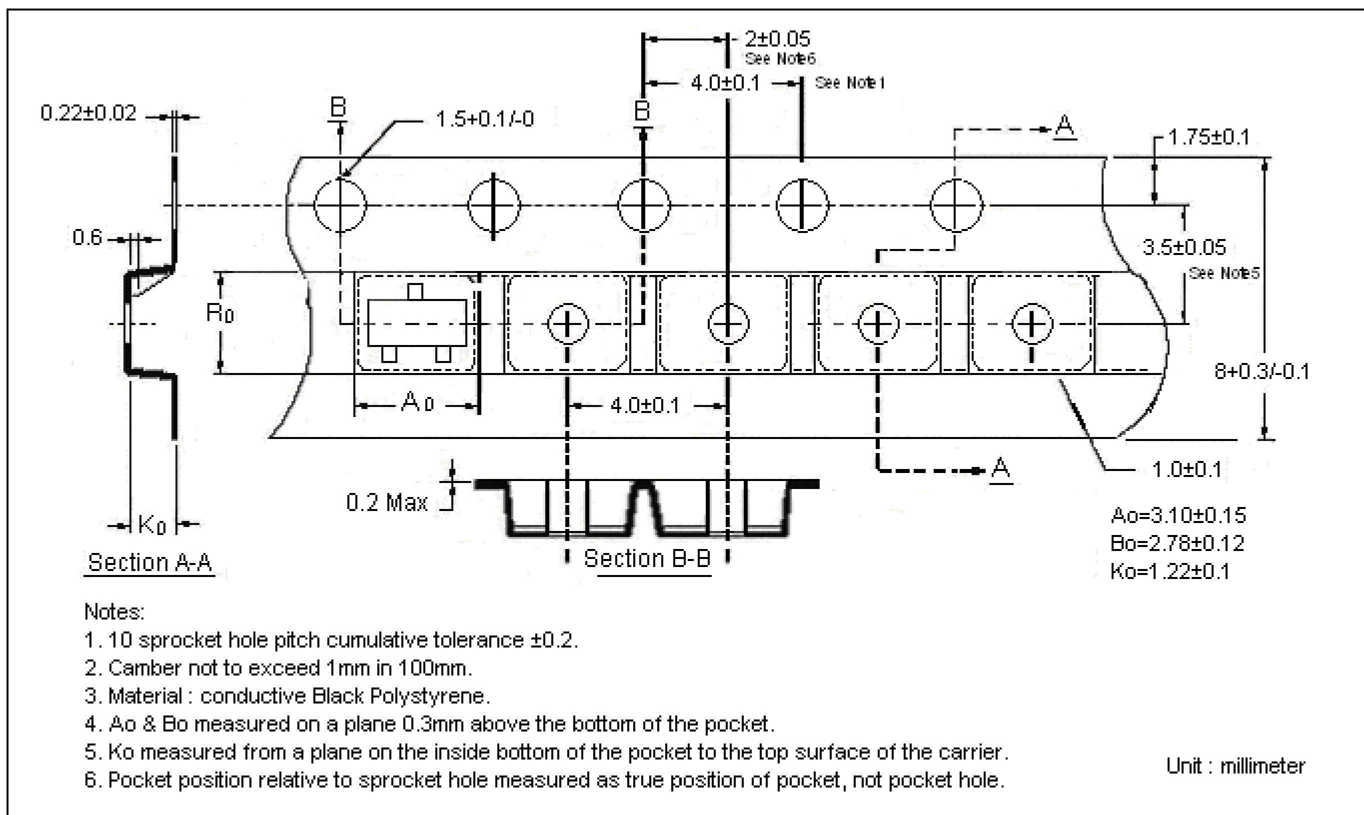
Recommended Soldering Footprint



Reel Dimension



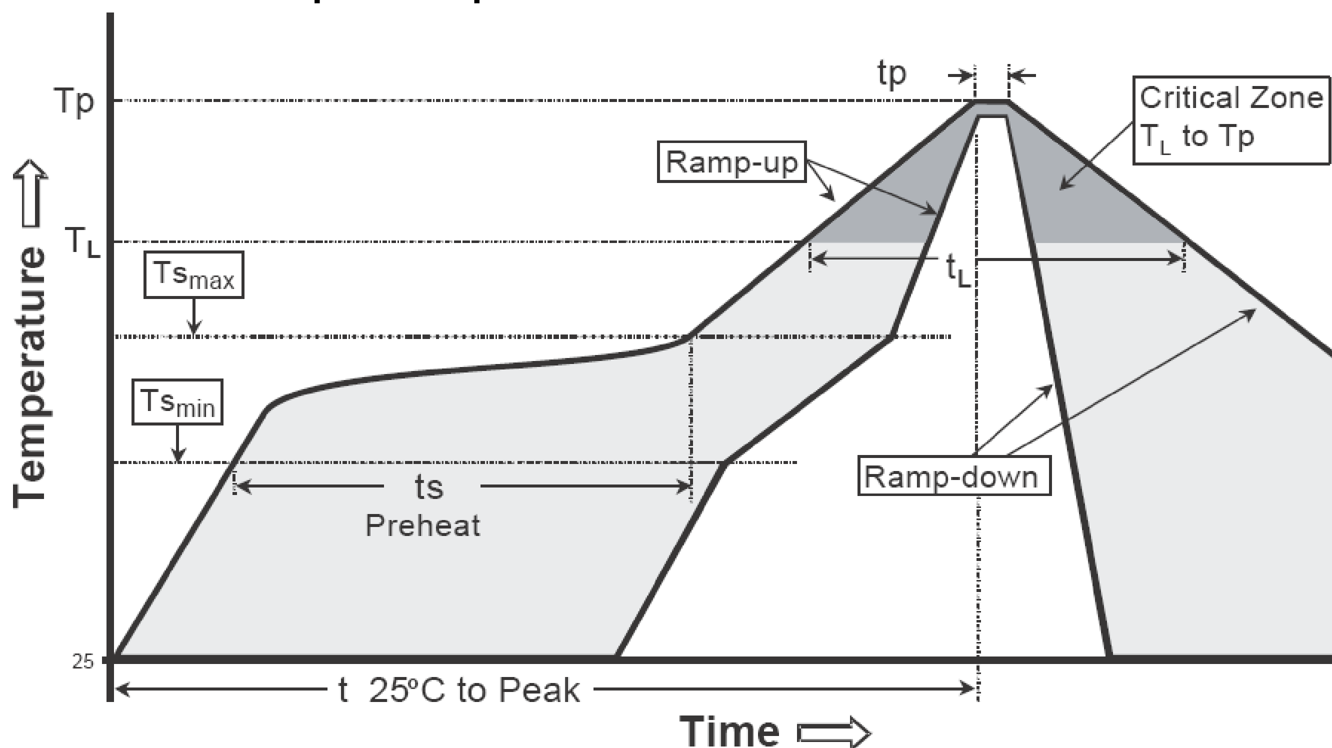
Carrier Tape Dimension



Recommended wave soldering condition

Product	Peak Temperature	Soldering Time
Pb-free devices	260 +0/-5 °C	5 +1/-1 seconds

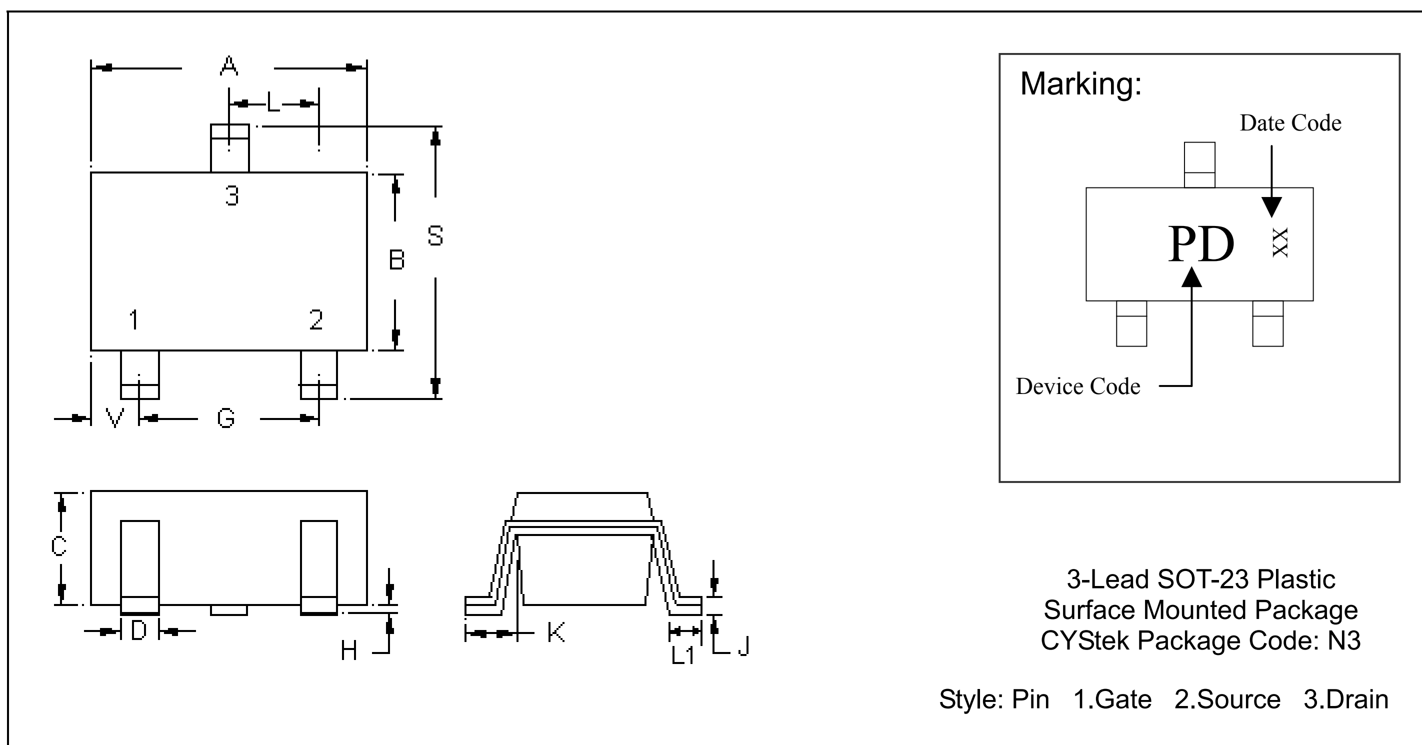
Recommended temperature profile for IR reflow



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(Ts min) −Temperature Max(Ts max) −Time(ts min to ts max)	100°C 150°C 60-120 seconds	150°C 200°C 60-180 seconds
Time maintained above: −Temperature (T_L) − Time (t_L)	183°C 60-150 seconds	217°C 60-150 seconds
Peak Temperature(T_P)	240 +0/-5 °C	260 +0/-5 °C
Time within 5°C of actual peak temperature(tp)	10-30 seconds	20-40 seconds
Ramp down rate	6°C/second max.	6°C/second max.
Time 25 °C to peak temperature	6 minutes max.	8 minutes max.

Note :1. All temperatures refer to topside of the package, measured on the package body surface.
2.For devices mounted on FR-4 PCB of 1.6mm or equivalent grade PCB. If other grade PCB is used, care should be taken to match the coefficients of thermal expansion between components and PCB. If they are not matched well, the solder joints may crack or the bodies of the parts may crack or shatter as the assembly cools.

SOT-23 Dimension



3-Lead SOT-23 Plastic
Surface Mounted Package
CYStek Package Code: N3

Style: Pin 1.Gate 2.Source 3.Drain

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0032	0.0079	0.08	0.20
B	0.0472	0.0669	1.20	1.70	K	0.0118	0.0266	0.30	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1161	2.10	2.95
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0000	0.0040	0.00	0.10	L1	0.0118	0.0197	0.30	0.50

Notes: 1.Controlling dimension: millimeters.
2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.

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