

**ESD protected N-Channel Enhancement Mode MOSFET**

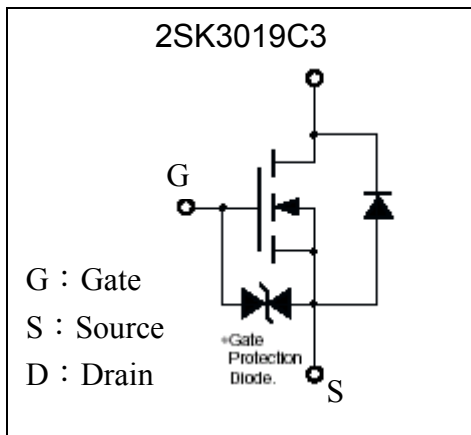
# 2SK3019C3

BV <sub>DSS</sub>	30V
I <sub>D</sub>	100mA
R <sub>DS(on)MAX</sub>	8Ω

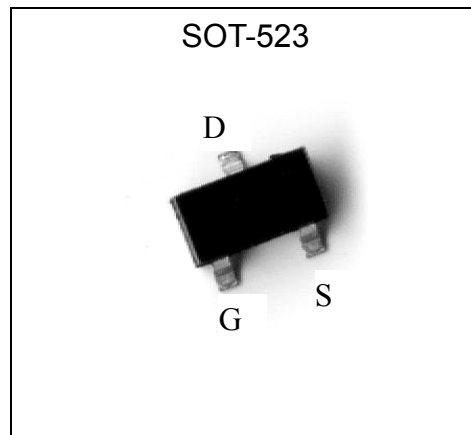
**Description**

- Low voltage drive(2.5V drive) makes this device ideal for portable equipment.
- High speed switching
- ESD protected device
- Pb-free lead plating & halogen-free package

**Symbol**

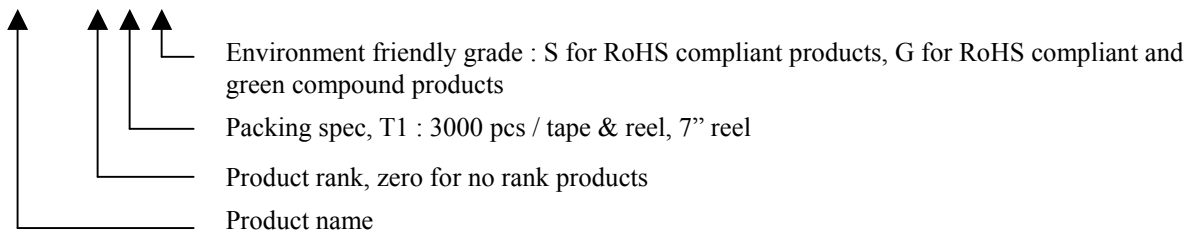


**Outline**



**Ordering Information**

Device	Package	Shipping
2SK3019C3-0-T1-G	SOT-523 (Pb-free lead plating package)	3000 pcs / tape & reel





**Absolute Maximum Ratings** (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		BV <sub>DSS</sub>	30	V
Gate-Source Voltage		V <sub>GS</sub>	±20	
Drain Current	Continuous	I <sub>D</sub>	±100	mA
	Pulsed	I <sub>DP</sub>	±200 *1	
Reverse Drain Current	Continuous	I <sub>DR</sub>	±100	
	Pulsed	I <sub>DRP</sub>	±200 *1	
Total Power Dissipation		P <sub>D</sub>	150 *2	mW
ESD susceptibility		V <sub>ESD</sub>	750 *3	V
Operating Junction and Storage Temperature Range		T <sub>j</sub> ; T <sub>stg</sub>	-55~+150	°C
Thermal Resistance, Junction-to-Ambient		R <sub>th,ja</sub>	833	°C/W

Note : \*1. Pulse Width ≤ 10μs, Duty cycle ≤ 1%  
 \*2. With each pin mounted on the recommended lands.  
 \*3. Human body model, 1.5kΩ in series with 100pF

**Electrical Characteristics** (Ta=25°C)

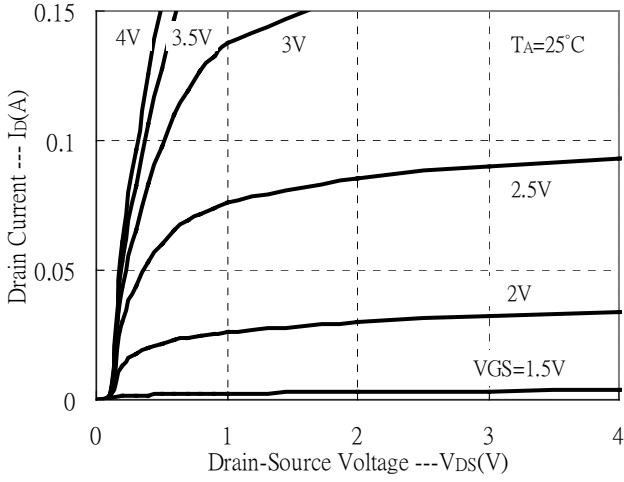
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
<b>Static</b>					
BV <sub>DSS</sub>	30	-	-	V	V <sub>GS</sub> =0V, I <sub>D</sub> =100μA
V <sub>GS(th)</sub>	0.8	-	1.5		V <sub>DS</sub> =3V, I <sub>D</sub> =100μA
I <sub>GSS</sub>	-	-	±1	μA	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V
I <sub>DSS</sub>	-	-	100	nA	V <sub>DS</sub> =30V, V <sub>GS</sub> =0V
R <sub>DS(ON)</sub>	-	3.4	8	Ω	V <sub>GS</sub> =4V, I <sub>D</sub> =10mA
	-	6.9	13		V <sub>GS</sub> =2.5V, I <sub>D</sub> =1mA
G <sub>FS</sub>	20	50	-	mS	V <sub>DS</sub> =3V, I <sub>D</sub> =10mA
<b>Dynamic</b>					
C <sub>iss</sub>	-	12.5	-	pF	V <sub>DS</sub> =5V, V <sub>GS</sub> =0V, f=1MHz
C <sub>oss</sub>	-	7.3	-		
C <sub>rss</sub>	-	3.5	-		
t <sub>d(on)</sub>	-	15	-	ns	V <sub>DD</sub> ≐ 5V, I <sub>D</sub> =10mA, V <sub>GS</sub> =5V, R <sub>L</sub> =500Ω, R <sub>G</sub> =10Ω
t <sub>r</sub>	-	35	-		
t <sub>d(off)</sub>	-	75	-		
t <sub>f</sub>	-	75	-		
<b>Source-Drain Diode</b>					
*V <sub>SD</sub>	-	0.88	1.2	V	V <sub>GS</sub> =0V, I <sub>S</sub> =100mA

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

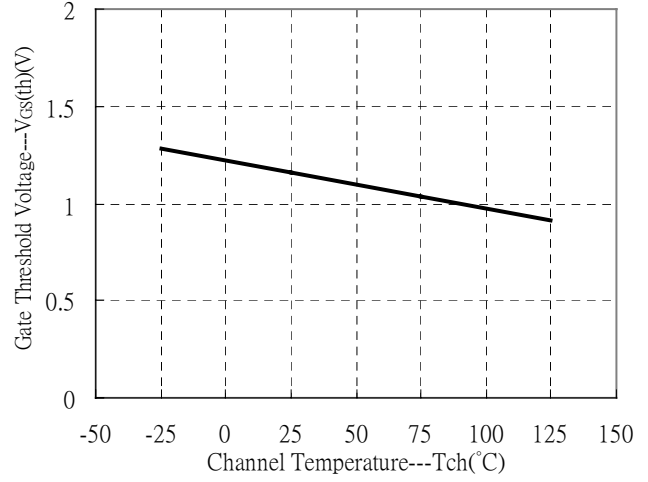


**Typical Characteristics**

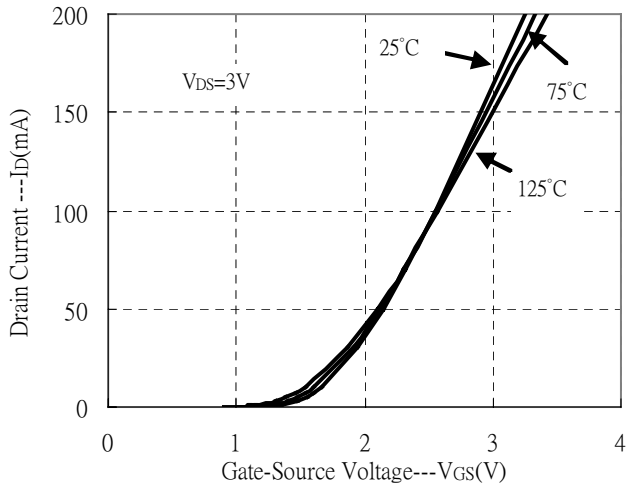
Typical Output Characteristics



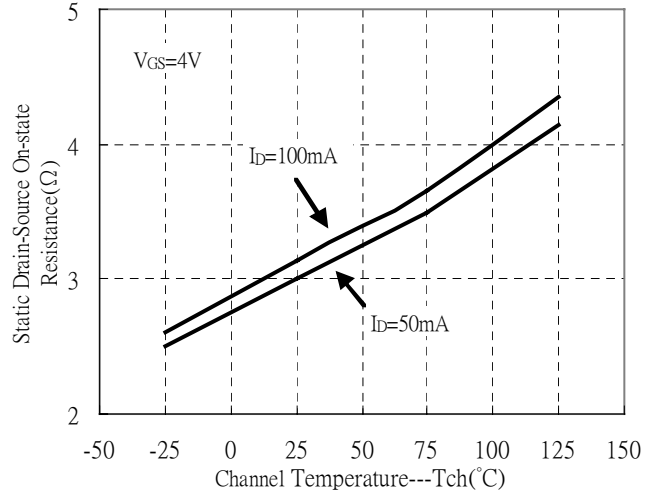
Gate Threshold Voltage vs Channel Temperature



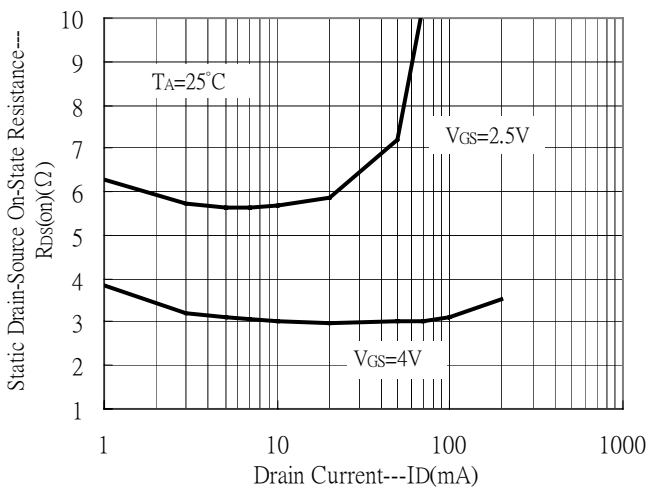
Typical Transfer Characteristics



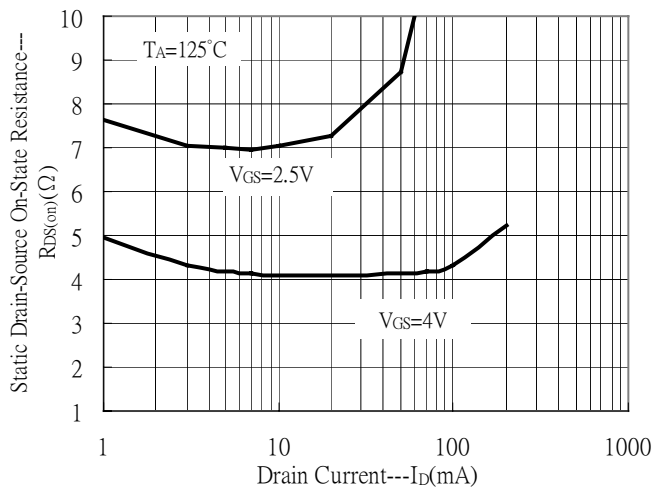
Static Drain-Source On-state Resistance with Temperature



Static Drain-Source On-State resistance vs Drain Current

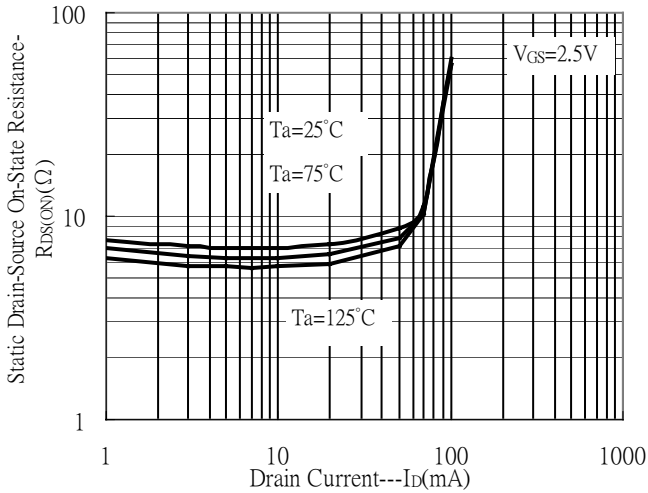


Static Drain-Source On-State resistance vs Drain Current

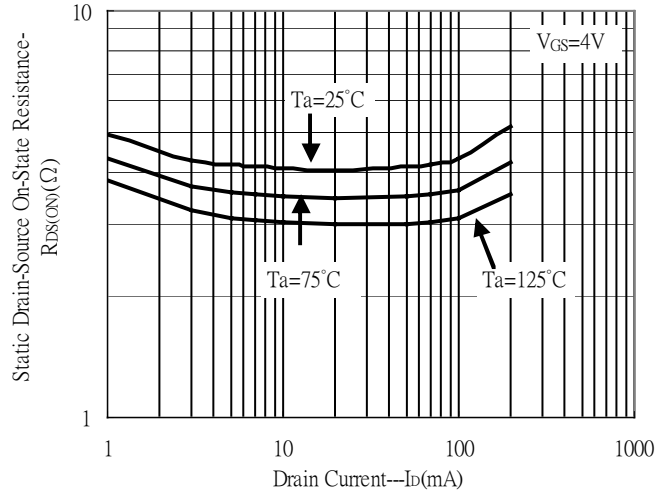


**Typical Characteristics(Cont.)**

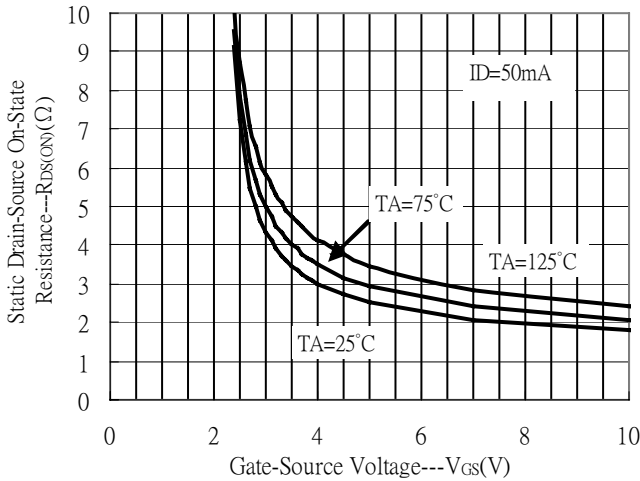
Static Drain-Source On-State Resistance vs Drain Current



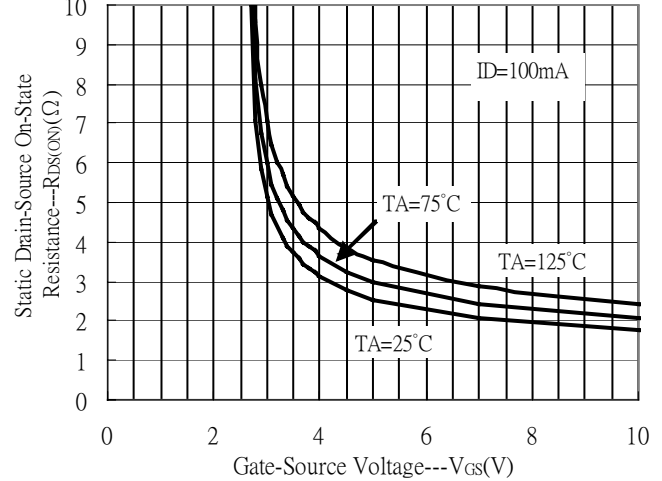
Static Drain-Source On-State Resistance vs Drain Current



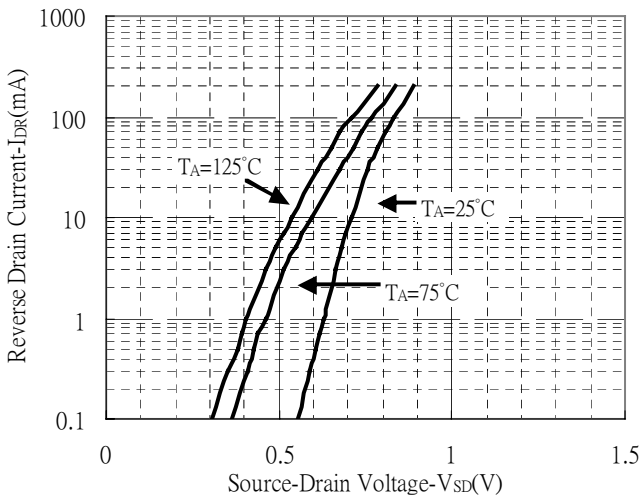
Static Drain-Source On-State Resistance vs Gate-Source Voltage



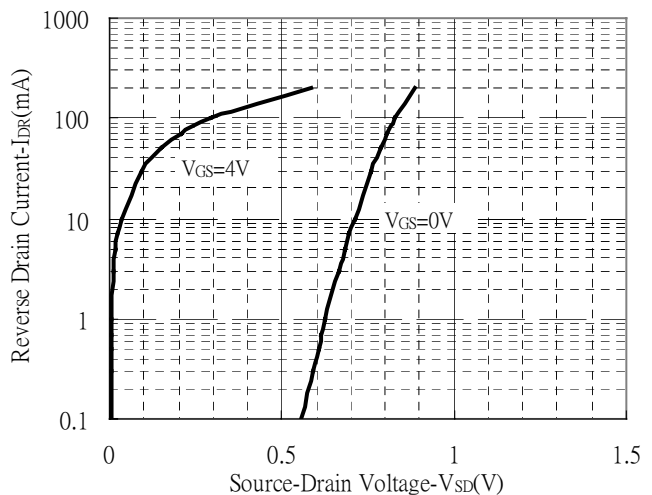
Static Drain-Source On-State Resistance vs Gate-Source Voltage



Reverse Drain Current vs Source-Drain Voltage(I)

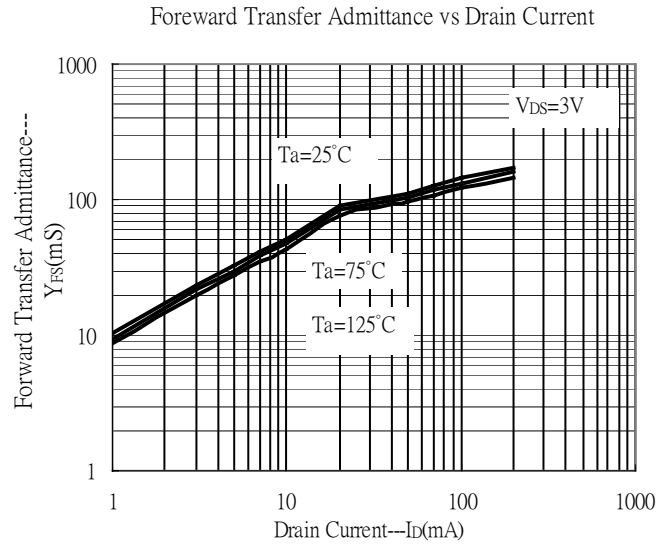
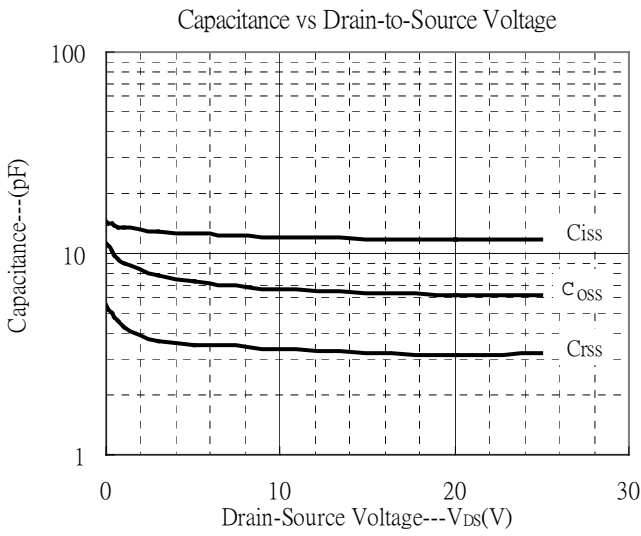


Reverse Drain Current vs Source-Drain Voltage(II)

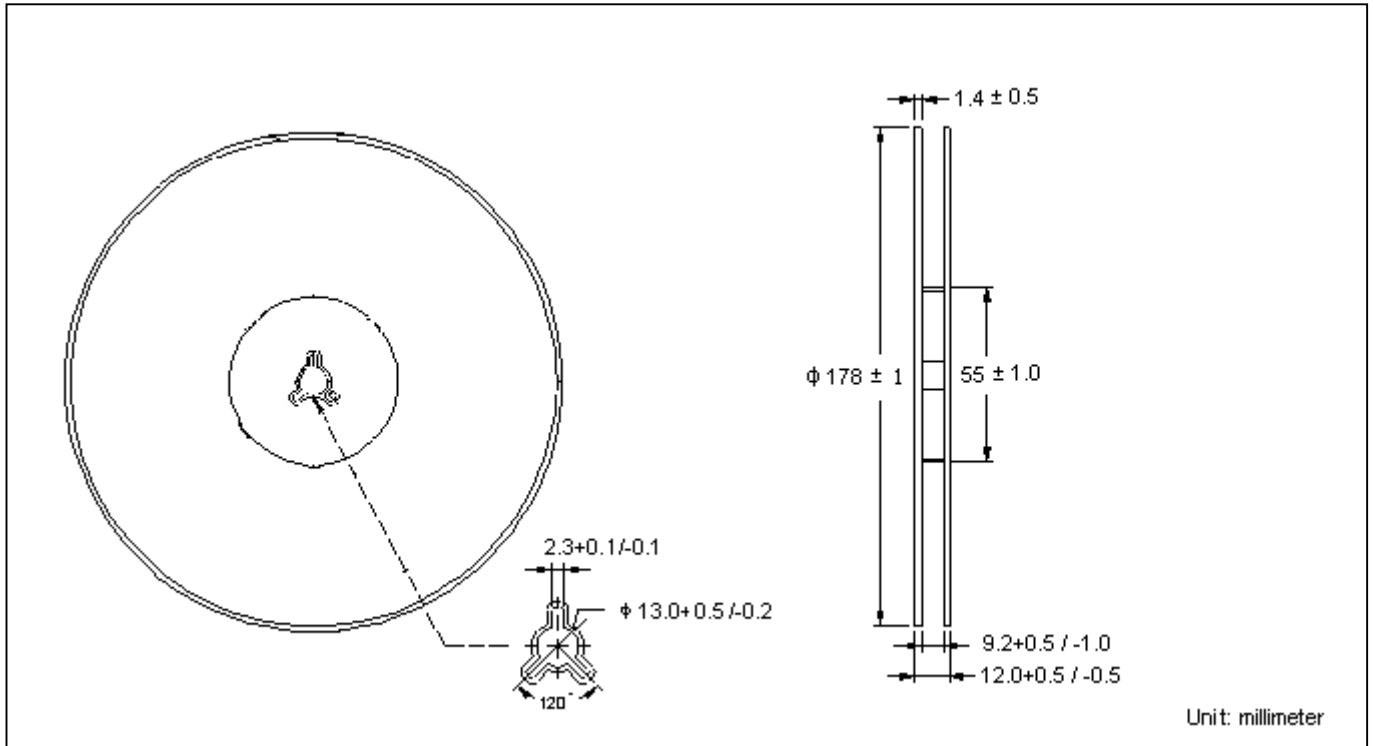




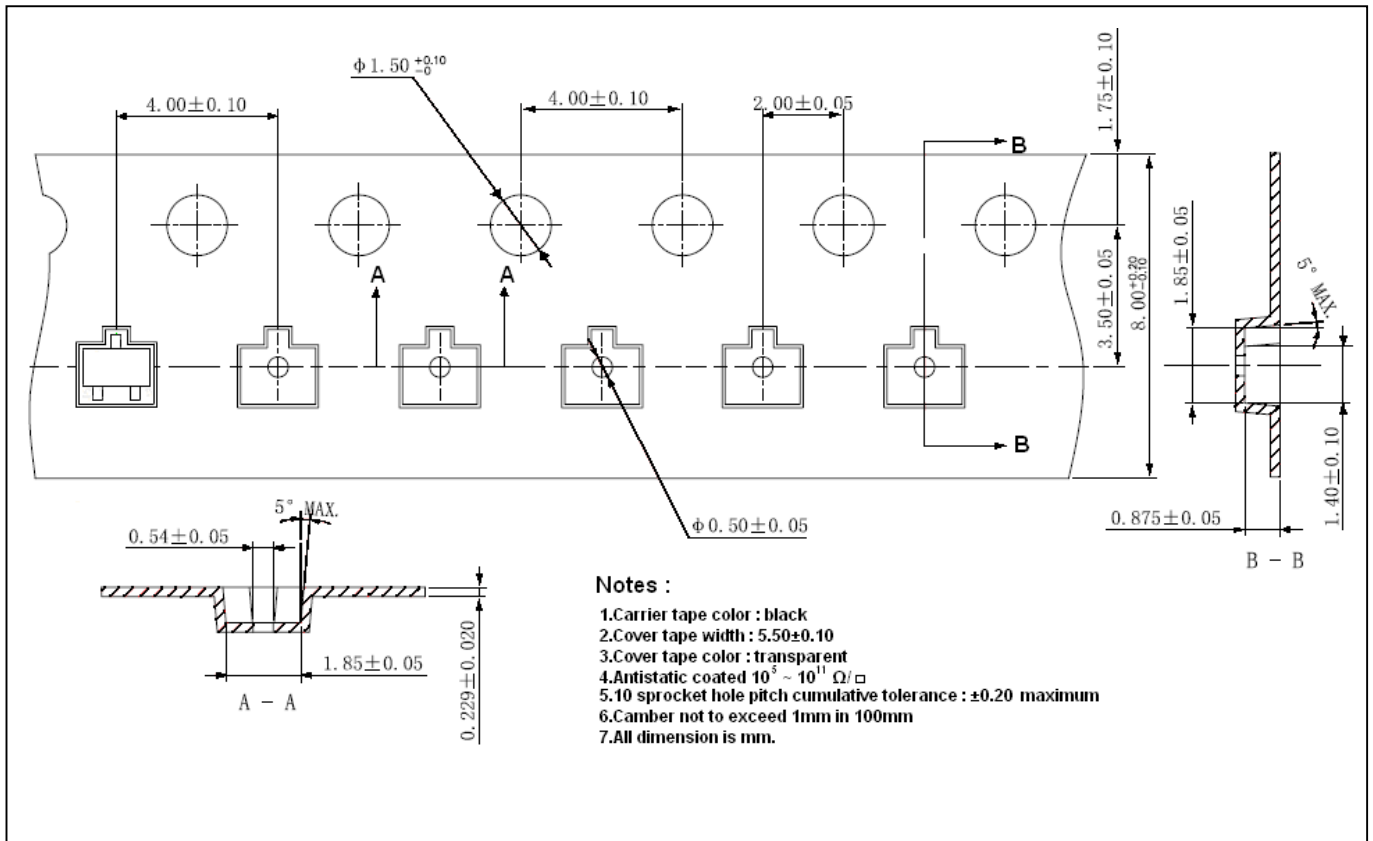
### Typical Characteristics(Cont.)



**Reel Dimension**



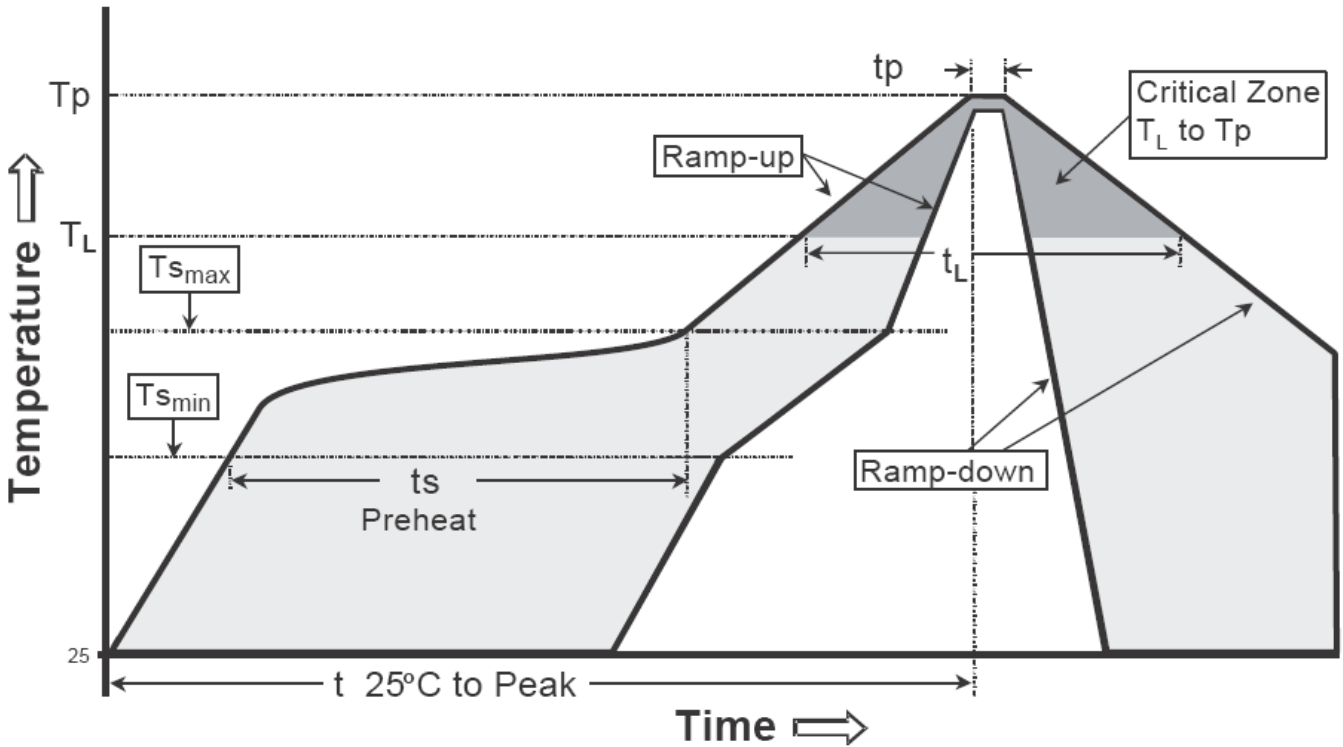
**Carrier Tape Dimension**



**Recommended wave soldering condition**

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

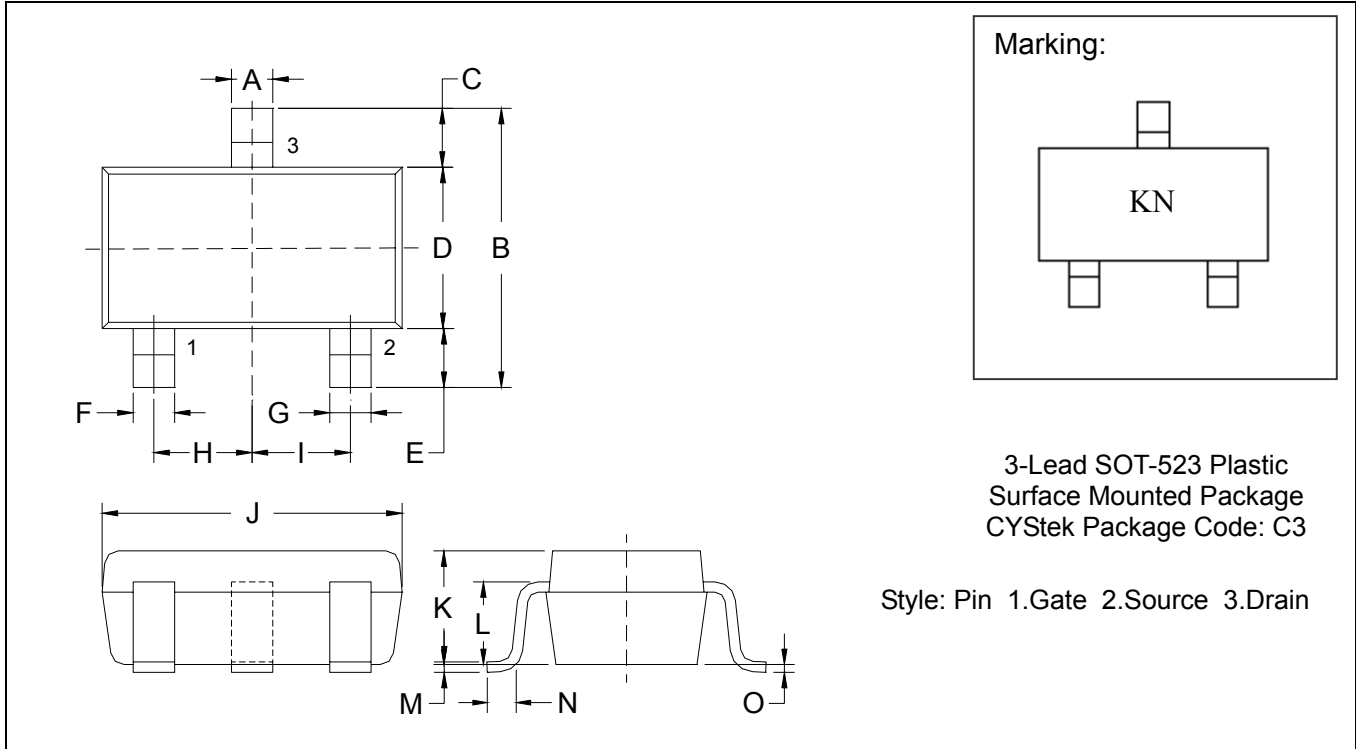
**Recommended temperature profile for IR reflow**



Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (T <sub>smax</sub> to T <sub>p</sub> )	3°C/second max.	3°C/second max.
Preheat		
-Temperature Min(T <sub>s min</sub> )	100°C	150°C
-Temperature Max(T <sub>s max</sub> )	150°C	200°C
-Time(t <sub>s min</sub> to t <sub>s max</sub> )	60-120 seconds	60-180 seconds
Time maintained above:		
-Temperature (T <sub>L</sub> )	183°C	217°C
- Time (t <sub>L</sub> )	60-150 seconds	60-150 seconds
Peak Temperature(T <sub>P</sub> )	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 : All temperatures refer to topside of the package, measured on the package body surface.

**SOT-523 Dimension**



\*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.0079	0.0157	0.20	0.40	I	*0.0197	-	*0.50	-
B	0.0591	0.0669	1.50	1.70	J	0.0610	0.0650	1.55	1.65
C	0.0118	0.0197	0.30	0.50	K	0.0276	0.0315	0.70	0.80
D	0.0295	0.0335	0.75	0.85	L	0.0224	0.0248	0.57	0.63
E	0.0118	0.0197	0.30	0.50	M	0.0020	0.0059	0.05	0.15
F	0.0039	0.0118	0.10	0.30	N	0.0039	0.0118	0.10	0.30
G	0.0039	0.0118	0.10	0.30	O	0	0.0031	0	0.08
H	*0.0197	-	*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

**Important Notice:**

- All rights are reserved. Reproduction in whole or in part is prohibited without the prior written approval of CYStek.
- CYStek reserves the right to make changes to its products without notice.
- CYStek **semiconductor products are not warranted to be suitable for use in Life-Support Applications, or systems.**
- CYStek assumes no liability for any consequence of customer product design, infringement of patents, or application assistance.