50V P-CHANNEL Enhancement Mode MOSFET

MTP3J15N3

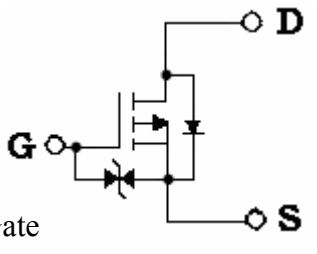
BV_{DSS}	-50V
I_D	-130mA
R_{DSON}@V_{GS}=-10V, I_D=-100mA	4.5Ω(typ)
R_{DSON}@V_{GS}=-5V, I_D=-100mA	6Ω(typ)

Features

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

Equivalent Circuit

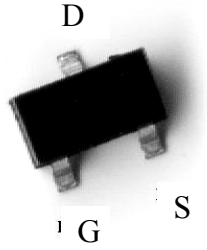
MTP3J15N3



G：Gate
S：Source
D：Drain

Outline

SOT-23



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	V
Continuous Drain Current @ T_A=25°C, V_{GS}=-5V	I_D	-130	mA
Pulsed Drain Current (Note 1)	I_{DM}	-520	mA
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	°C

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
$V_{GS(th)}$	-1	-1.4	-2	V	V_{DS}=V_{GS}, I_D=-1mA
G_{FS}	100	-	-	mS	V_{DS}=-15V, I_D=-100mA
I_{GSS}	-	-	±10	μA	V_{GS}=±20V, V_{DS}=0
I_{DSS}	-	-	-0.1	μA	V_{DS}=-25V, V_{GS}=0
	-	-	-1		V_{DS}=-50V, V_{GS}=0
	-	-	-25		V_{DS}=-50V, V_{GS}=0, Tj=125°C
*$R_{DS(ON)}$	-	6	10	Ω	V_{GS}=-5V, I_D=-100mA
	-	5	8		V_{GS}=-10V, I_D=-100mA
Dynamic					
Ciss	-	25	-	pF	V_{DS}=-5V, V_{GS}=0, 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

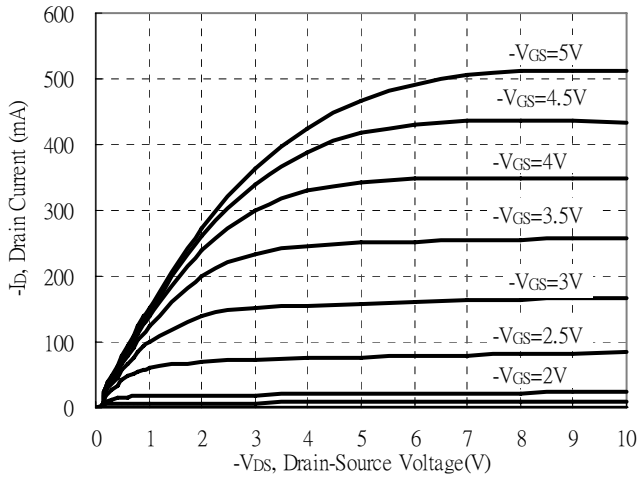
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Ordering Information

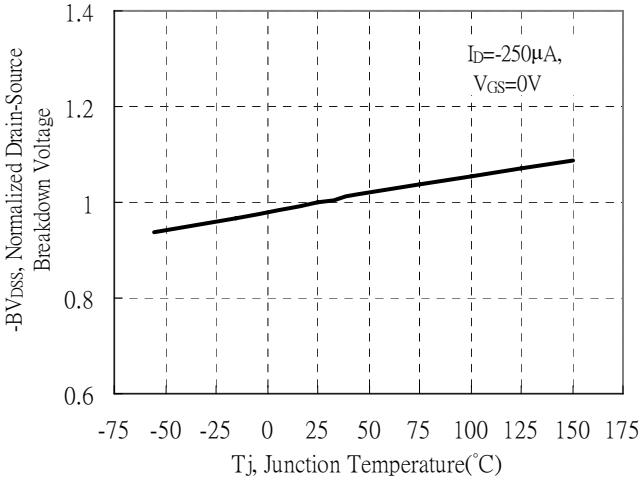
Device	Package	Shipping	Marking
MTP3J15N3	SOT-23 (Pb-free)	3000 pcs / Tape & Reel	PD

Typical Characteristics

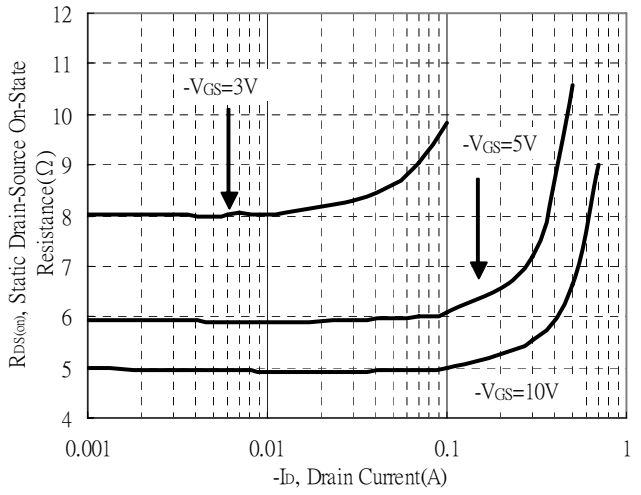
Typical Output Characteristics



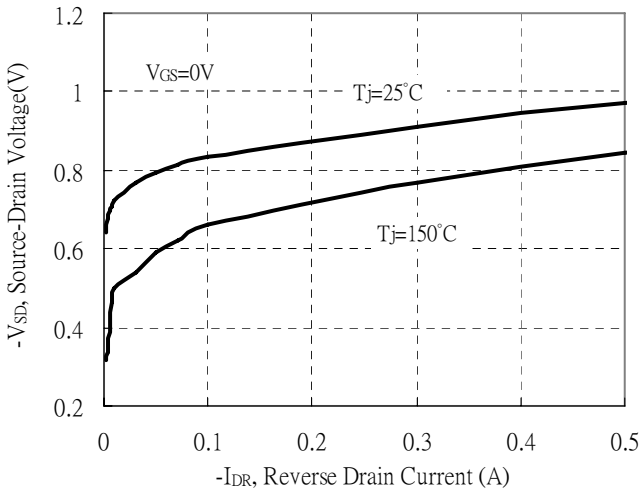
Brekdown Voltage vs Ambient Temperature



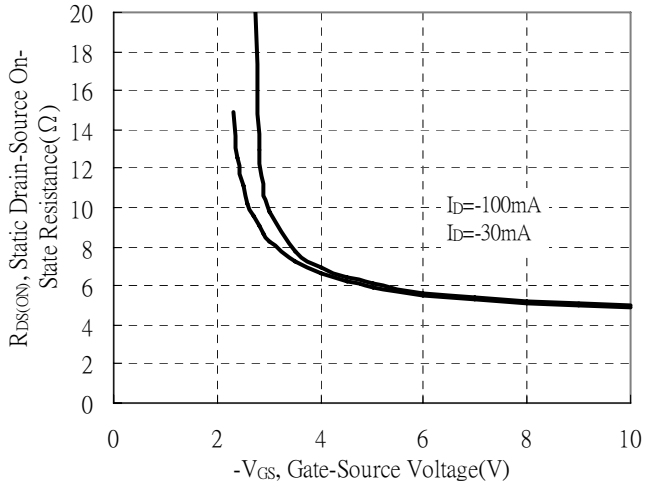
Static Drain-Source On-State resistance vs Drain Current



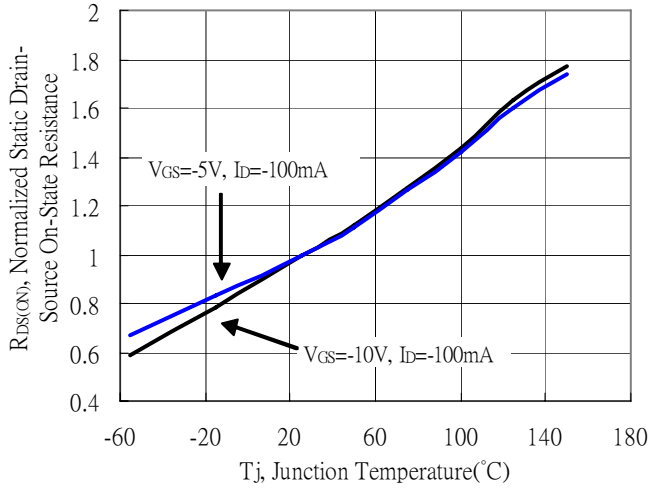
Reverse Drain Current vs Source-Drain Voltage



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

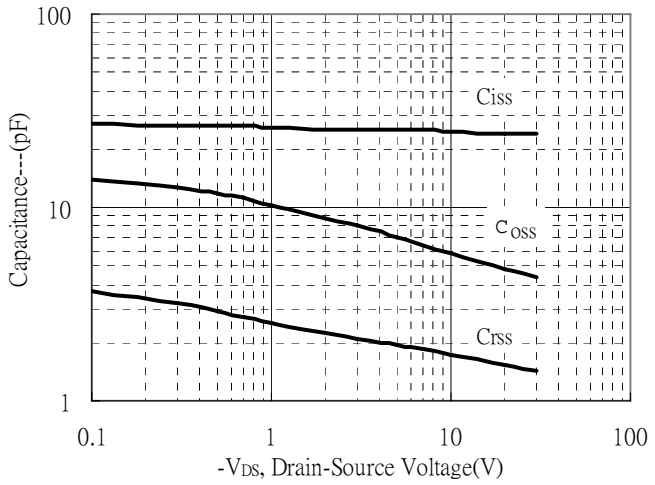


Drain-Source On-State Resistance vs Junction Tempearture

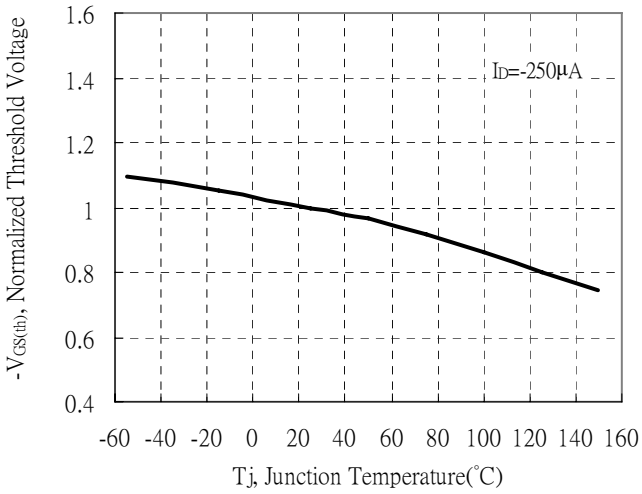


Typical Characteristics(Cont.)

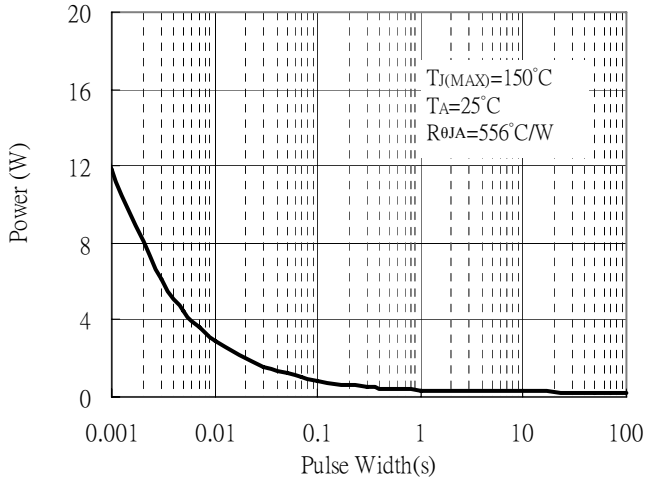
Capacitance vs Drain-to-Source Voltage



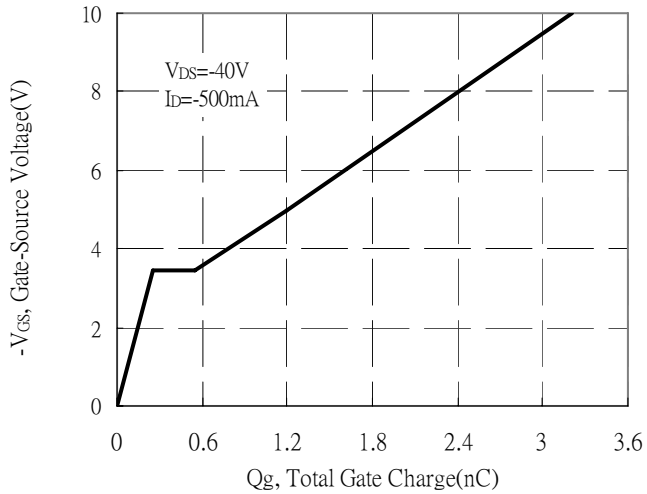
Threshold Voltage vs Junction Tempearture



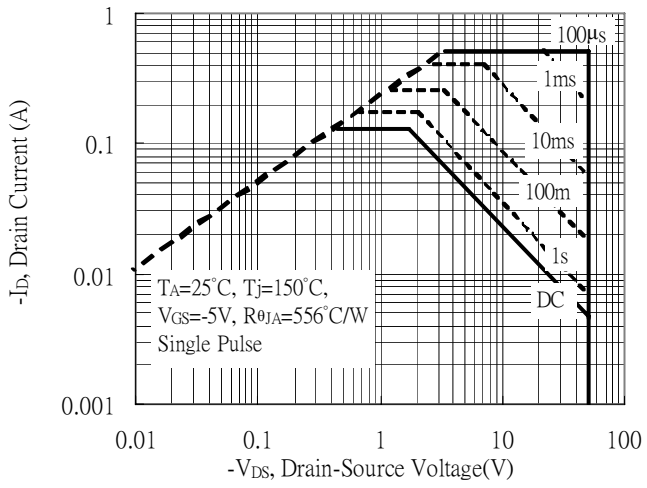
Single Pulse Power Rating, Junction to Ambient
(Note on page 2)



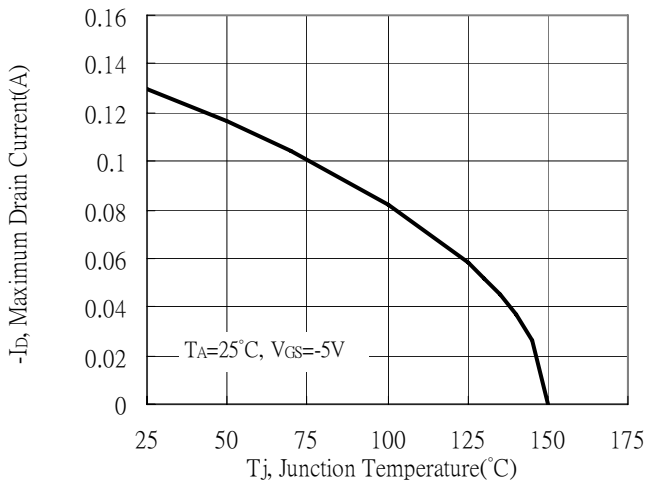
Gate Charge Characteristics



Maximum Safe Operating Area

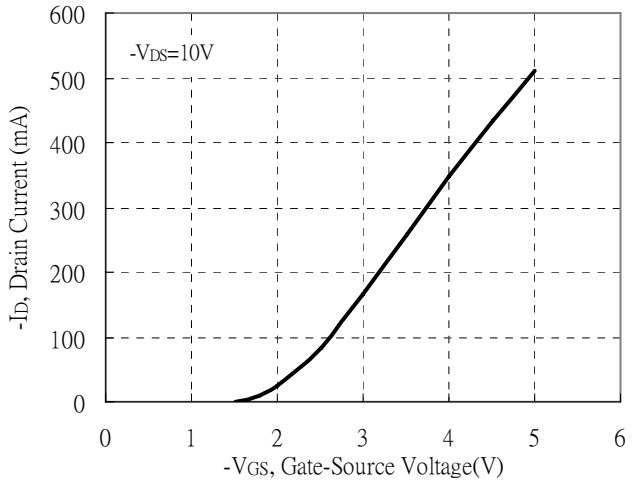


Maximum Drain Current vs JunctionTemperature

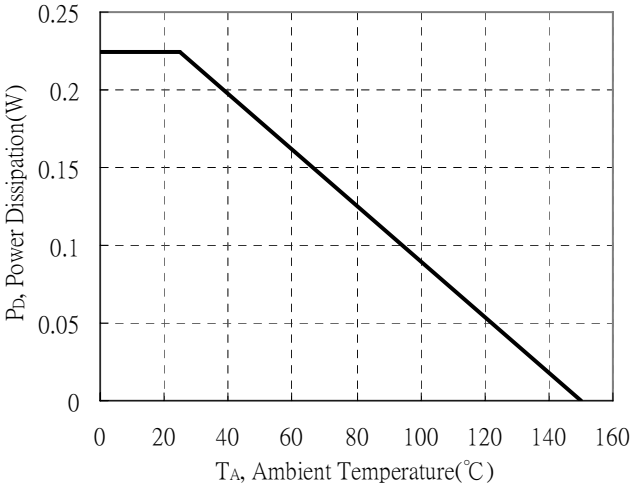


Typical Characteristics(Cont.)

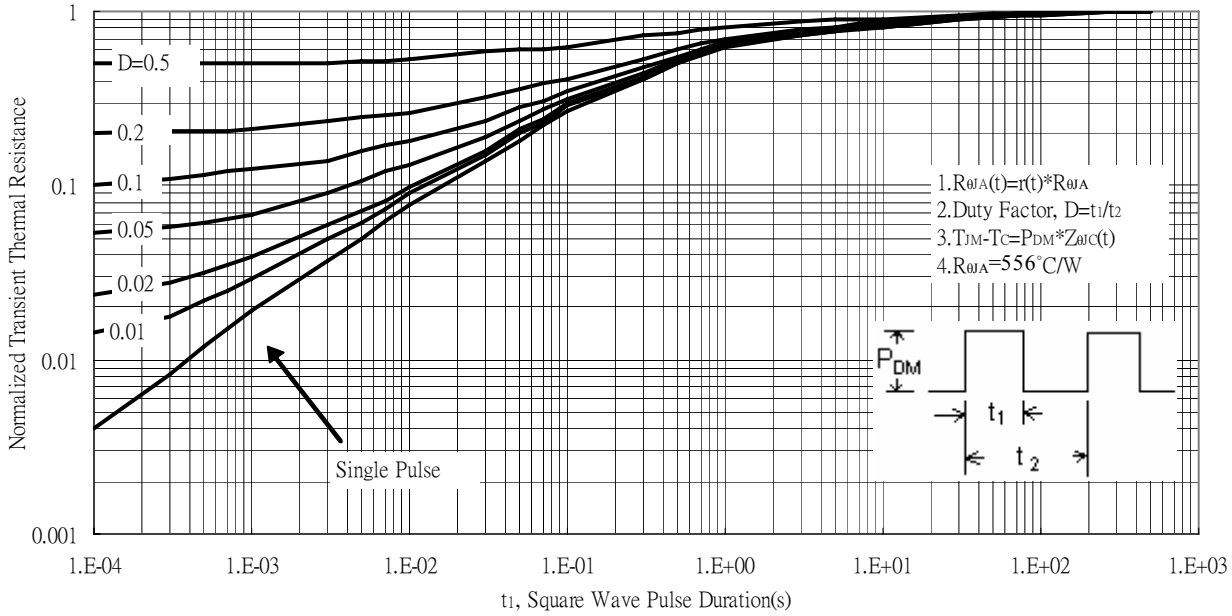
Typical Transfer Characteristics



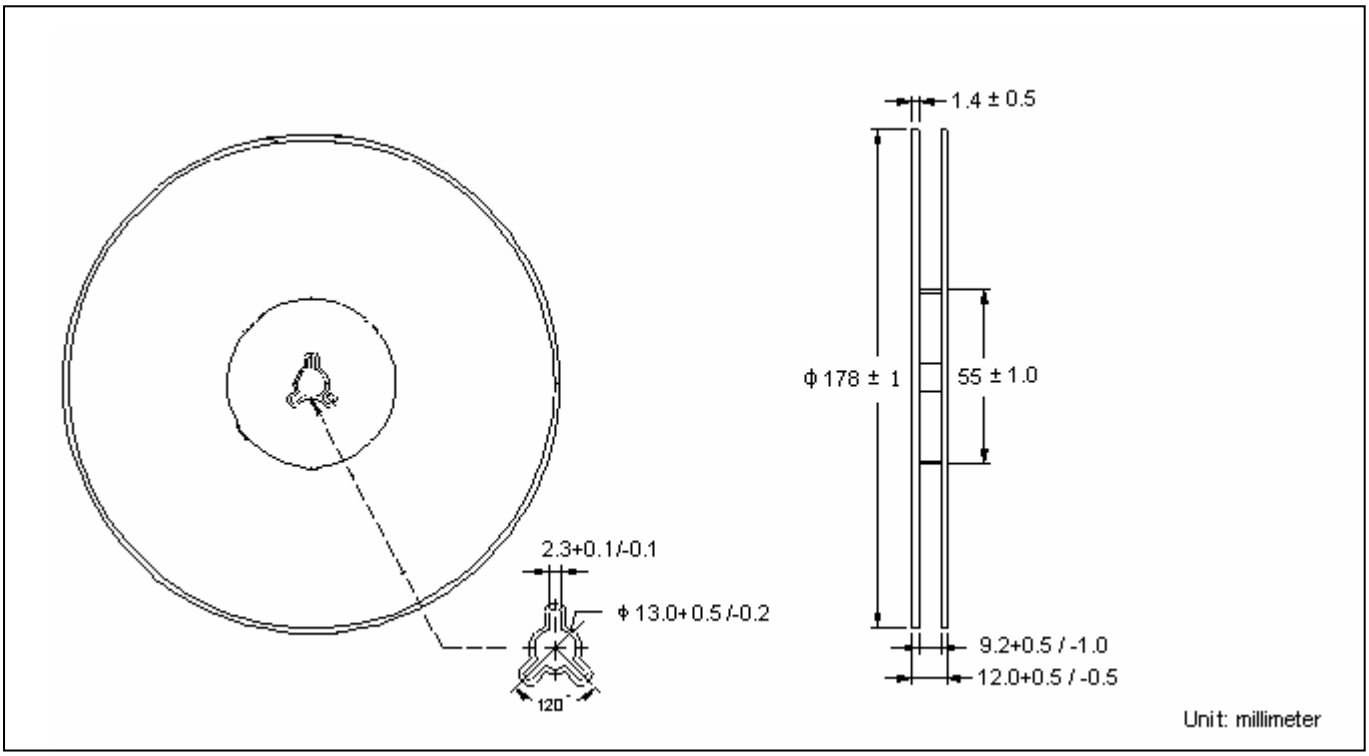
Power Derating Curve



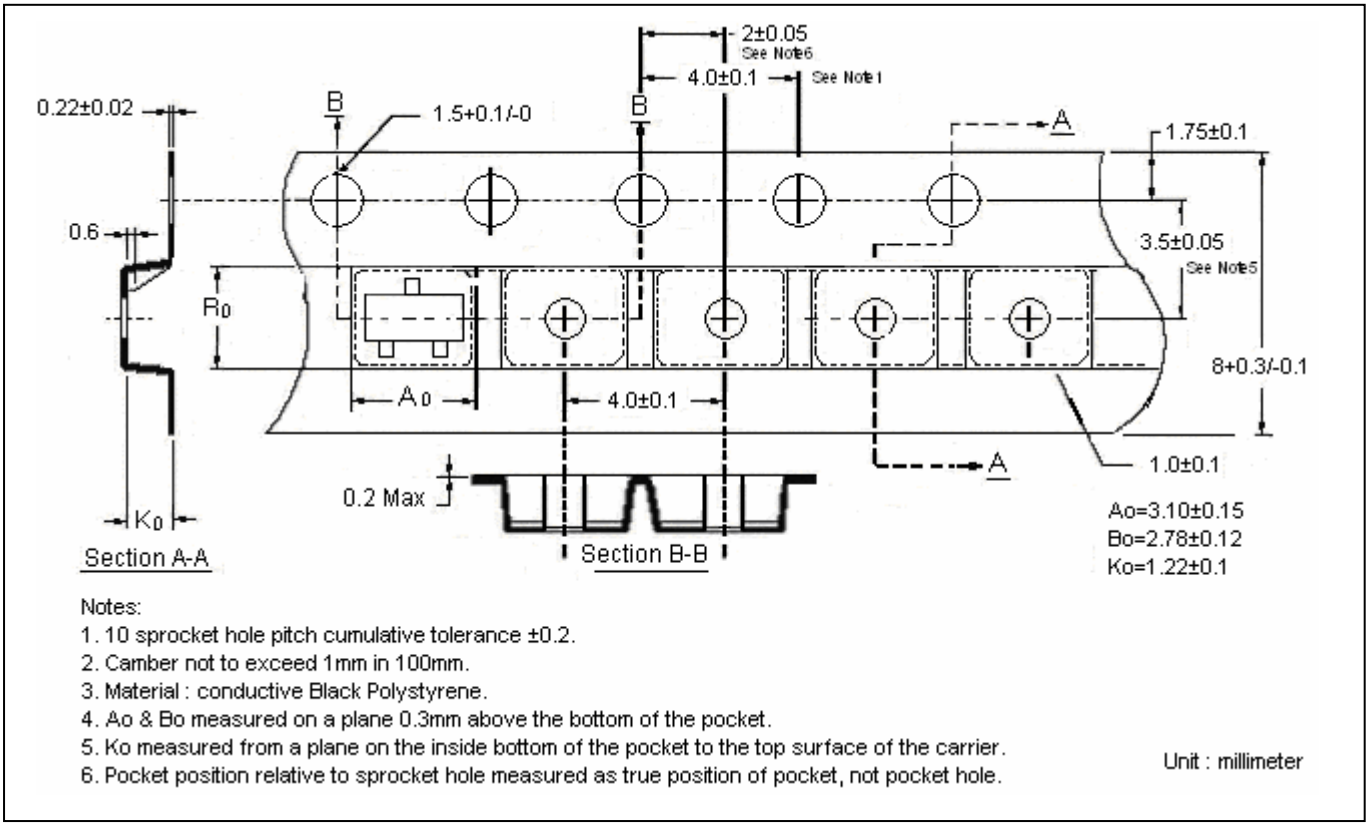
Transient Thermal Response Curves



Reel Dimension



Carrier Tape Dimension



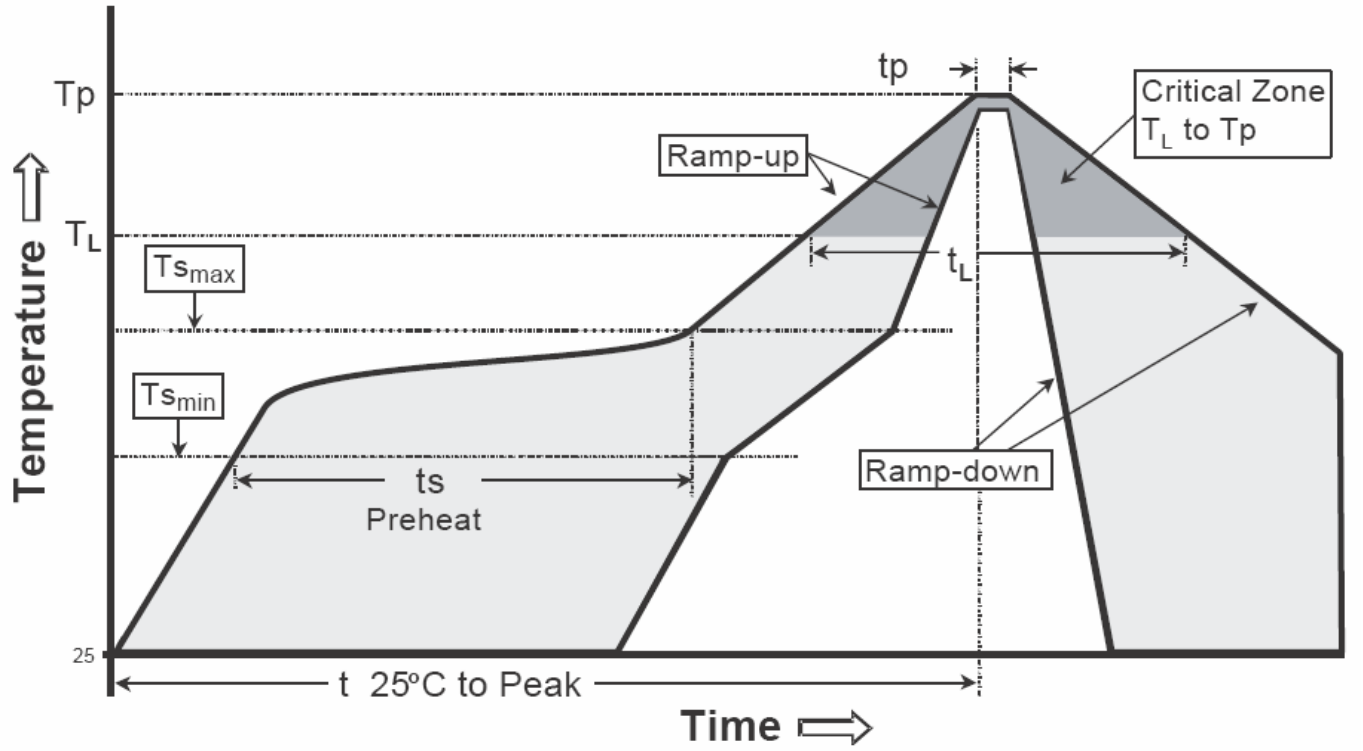
Notes:
1. 10 sprocket hole pitch cumulative tolerance ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material : conductive Black Polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.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

Unit : millimeter

Recommended wave soldering condition

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

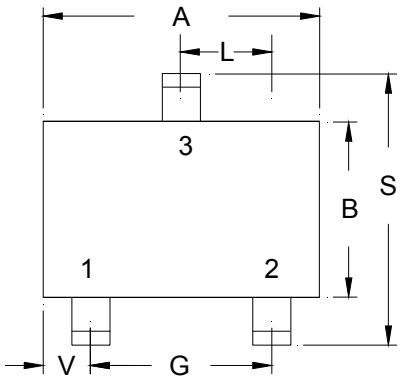
Recommended temperature profile for IR reflow

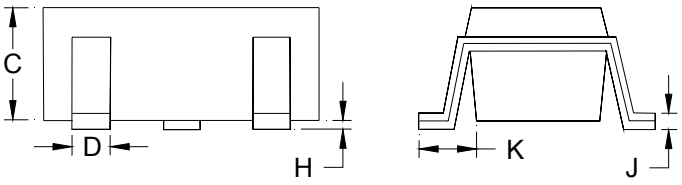


Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(T_S min) −Temperature Max(T_S max) −Time($t_{s\ min}$ to $t_{s\ max}$)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (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.

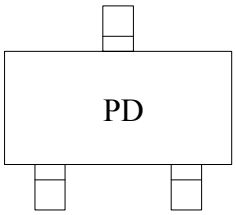
Note : All temperatures refer to topside of the package, measured on the package body surface.

SOT-23 Dimension





Marking:



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					

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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