N-Channel Enhancement Mode Power MOSFET

MTEA2N15L3

BV_{DSS}	**150V**
I_D@V_{GS}=10V,T_A=25°C	**3A**
R_{DSON}@V_{GS}=10V, I_D=2.8A	**119mΩ(typ)**
R_{DSON}@V_{GS}=6V, I_D=2.4A	**126mΩ(typ)**

Description

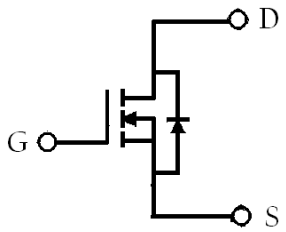
The MTEA2N15L3 is a N-channel enhancement-mode MOSFET, providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness.
The SOT-223 package is universally preferred for all commercial-industrial surface mount applications.

Features

- Single Drive Requirement
- Fast Switching Characteristic
- Repetitive Avalanche Rated
- Pb-free lead plating and halogen-free package

Symbol

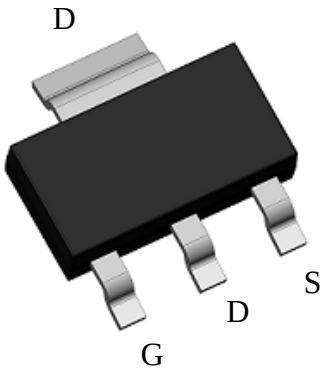
MTEA2N15L3



G：Gate　D：Drain　S：Source

Outline

SOT-223



Ordering Information

Device	Package	Shipping
MTEA2N15L3-0-T3-G	SOT-223 (Pb-free lead plating and halogen-free package)	2500 pcs / tape & reel

Environment friendly grade : S for RoHS compliant products, G for RoHS compliant and green compound products

Packing spec, T3 : 2500 pcs / tape & reel, 13” reel

Product rank, zero for no rank products

Product name

Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current @V_{GS}=10V, T_C=25°C		I_D	5.2	A
Continuous Drain Current @V_{GS}=10V, T_C=100°C			3.3	
Continuous Drain Current @V_{GS}=10V, T_A=25°C			3	
Continuous Drain Current @V_{GS}=10V, T_A=70°C			2.4	
Pulsed Drain Current		I_{DM}	16 *1	
Total Power Dissipation	T_C=25℃	P_D	8.3	W
	T_C=100℃		3.3	
	T_A=25℃		2.8	
	T_A=100℃		1.1	
Operating Junction and Storage Temperature Range		Tj, Tstg	-55~+150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	15	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	45 *3	

Note : 1. Pulse width limited by maximum junction temperature
2. Duty cycle≤1%
3. Surface mounted on 1 in² copper pad of FR-4 board, 120°C/W when mounted on minimum copper pad

Characteristics (T_C=25°C, unless otherwise specified)

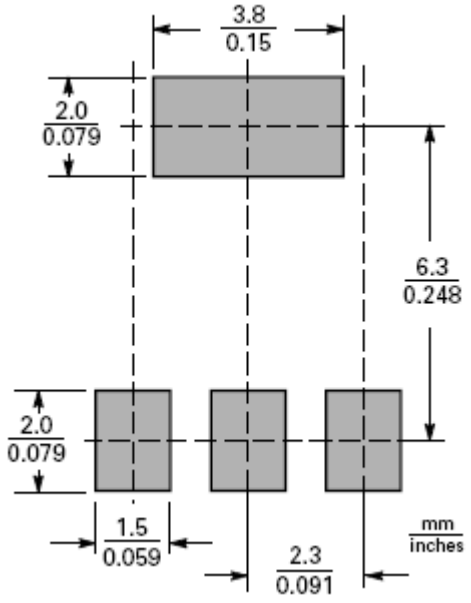
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	150	-	-	V	V_{GS}=0V, I_D=250μA
$V_{GS(th)}$	2.0	-	4.0		V_{DS} = V_{GS}, I_D=250μA
G_{FS} *1	-	4.5	-	S	V_{DS} =10V, I_D=1.6A
I_{GSS}	-	-	±100	nA	V_{GS}=±20V, V_{DS}=0V
I_{DSS}	-	-	1	μA	V_{DS} =120V, V_{GS} =0V
	-	-	25		V_{DS} =120V, V_{GS} =0V, Tj=125°C
$R_{DS(ON)}$ *1	-	119	160	mΩ	V_{GS} =10V, I_D=2.8A
	-	126	180		V_{GS} =6V, I_D=2.4A
Dynamic					
Ciss	-	536	-	pF	V_{GS}=0V, V_{DS}=25V, f=1MHz
Coss	-	57	-		
Crss	-	21	-		

Characteristics (T_C=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Qg *1, 2	-	12	-	nC	V_{DS}=75V, V_{GS}=10V, I_D=3A
Qgs *1, 2	-	2.2	-		
Qgd *1, 2	-	4.9	-		
$t_{d(ON)}$ *1, 2	-	6	-	ns	V_{DS}=25V, I_D=1A, V_{GS}=10V, R_{GS}=6Ω
tr *1, 2	-	12	-		
$t_{d(OFF)}$ *1, 2	-	17	-		
t_f *1, 2	-	4	-		
Source-Drain Diode					
I_S *1	-	-	2.1	A	
I_{SM} *3	-	-	8.4		
V_{SD} *1	-	0.76	1.3	V	I_F=Is, V_{GS}=0V
trr	-	40	-	ns	I_F=Is, dI_F/dt=100A/μs
Qrr	-	100	-	nC	

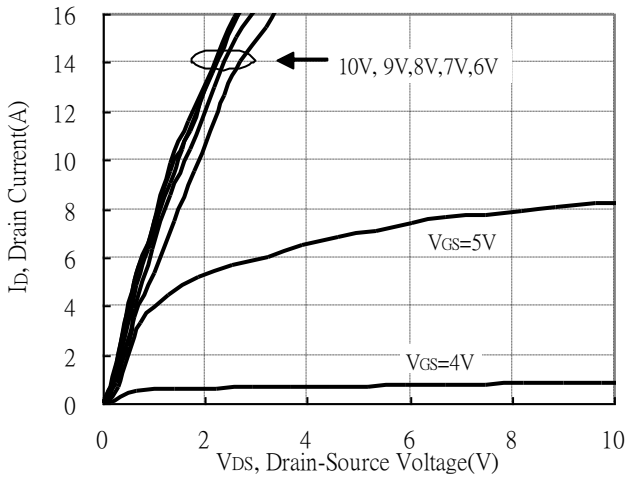
Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%
*2.Independent of operating temperature
*3.Pulse width limited by maximum junction temperature.

Recommended soldering footprint

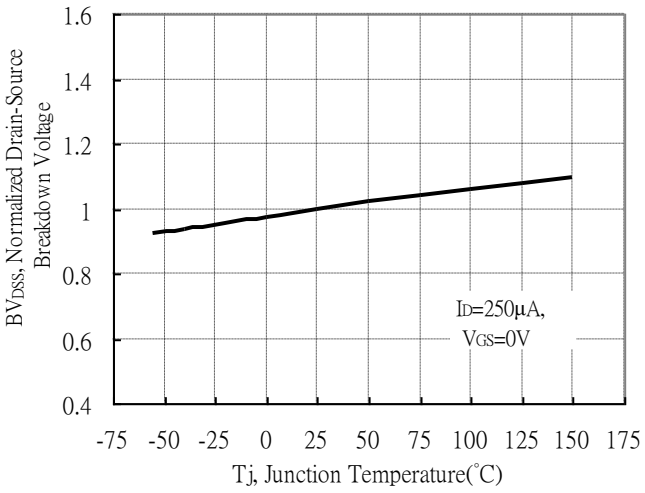


Typical Characteristics

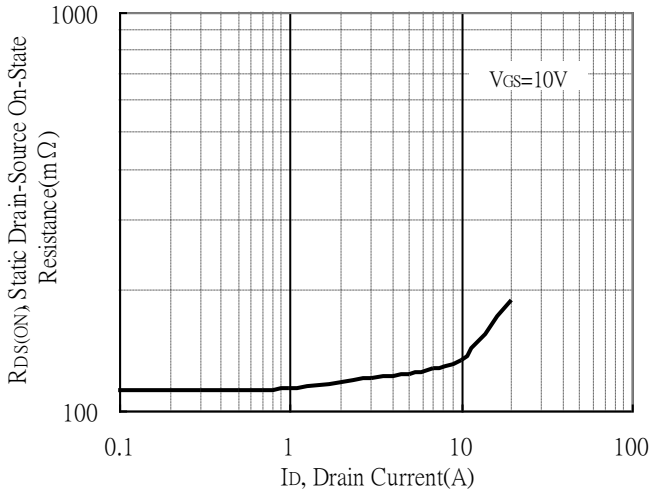
Typical Output Characteristics



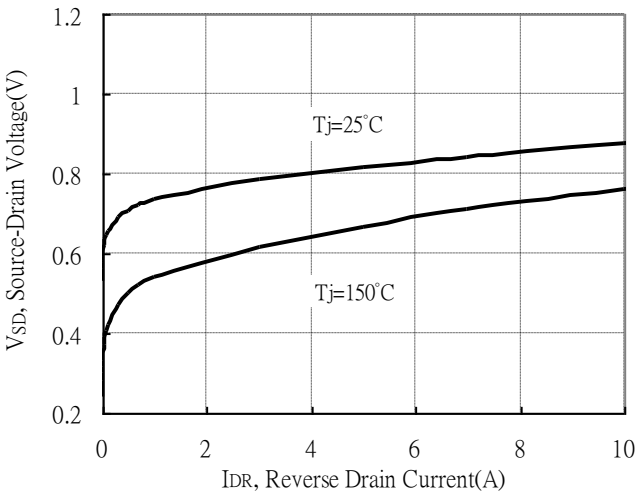
Brekdown Voltage vs Ambient Temperature



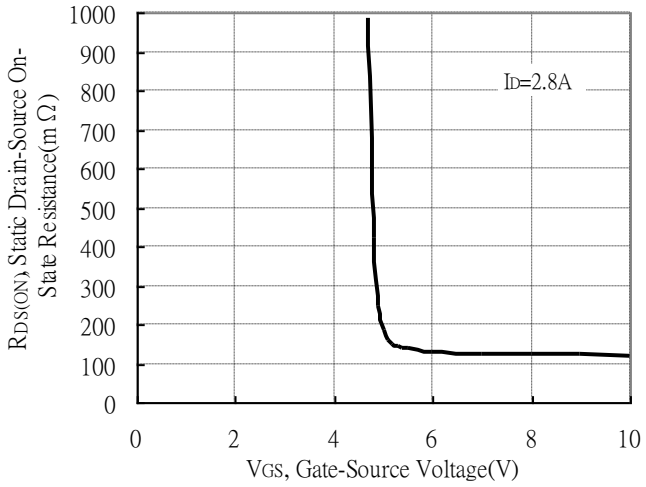
Static Drain-Source On-State resistance vs Drain Current



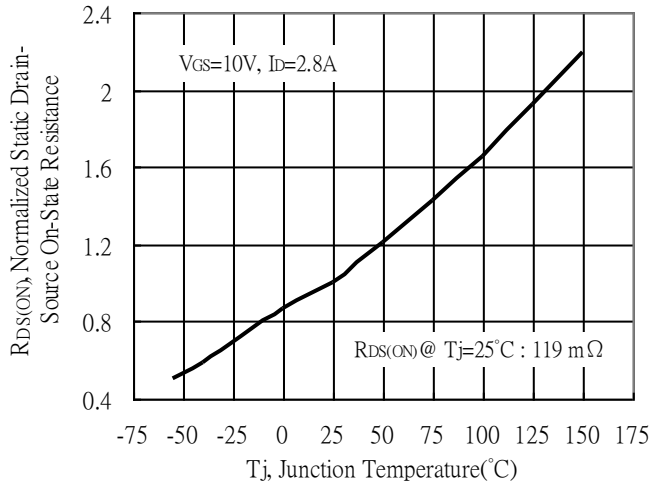
Reverse Drain Current vs Source-Drain Voltage



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

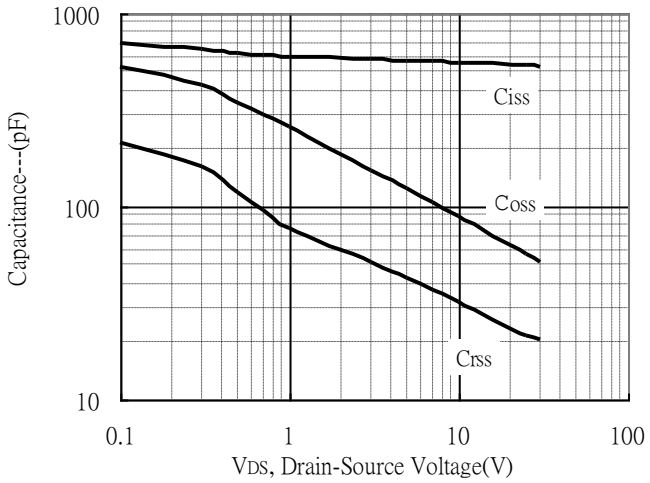


Drain-Source On-State Resistance vs Junction Tempearture

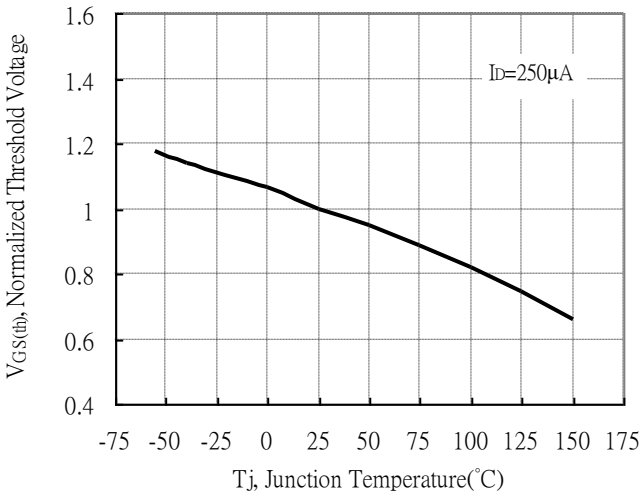


Typical Characteristics(Cont.)

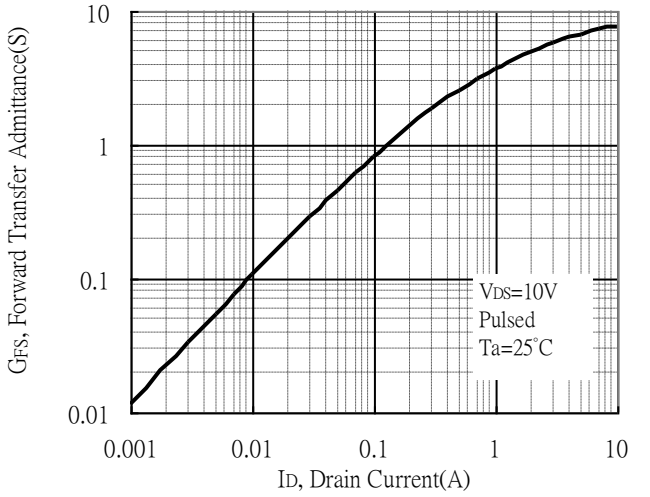
Capacitance vs Drain-to-Source Voltage



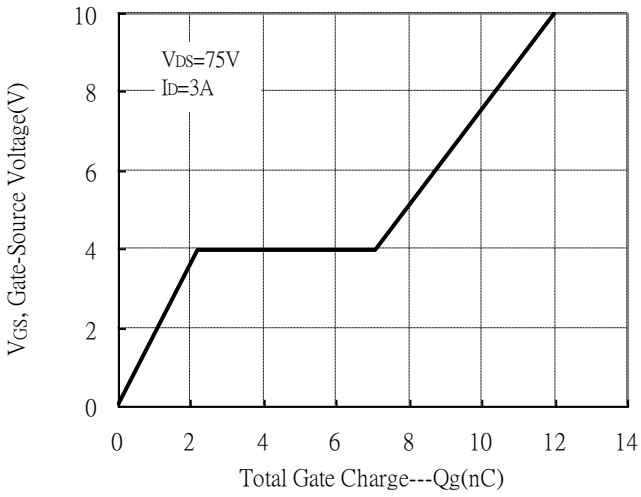
Threshold Voltage vs Junction Tempearture



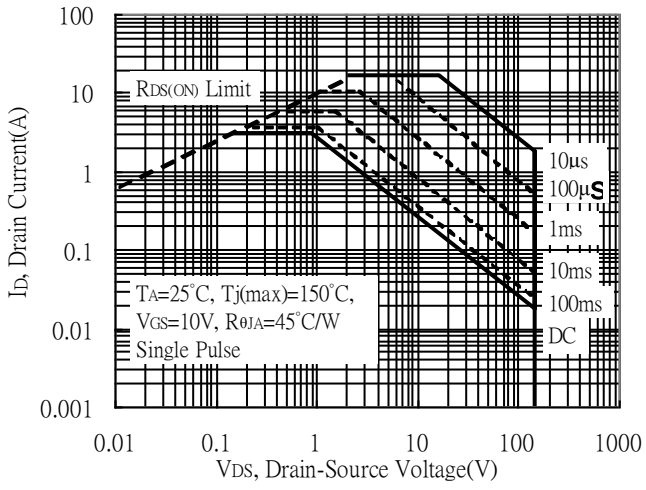
Forward Transfer Admittance vs Drain Current



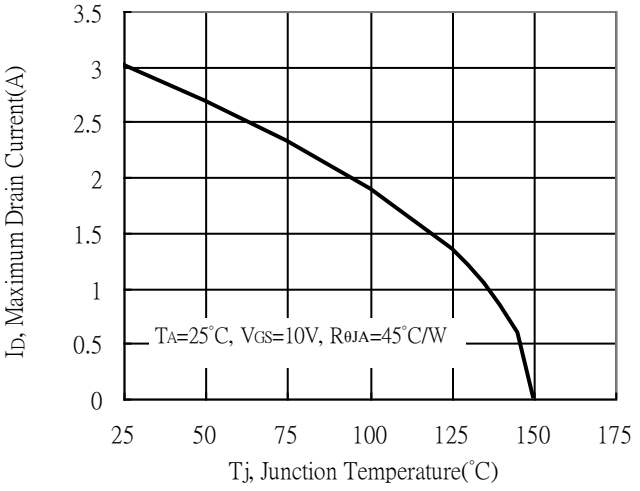
Gate Charge Characteristics



Maximum Safe Operating Area

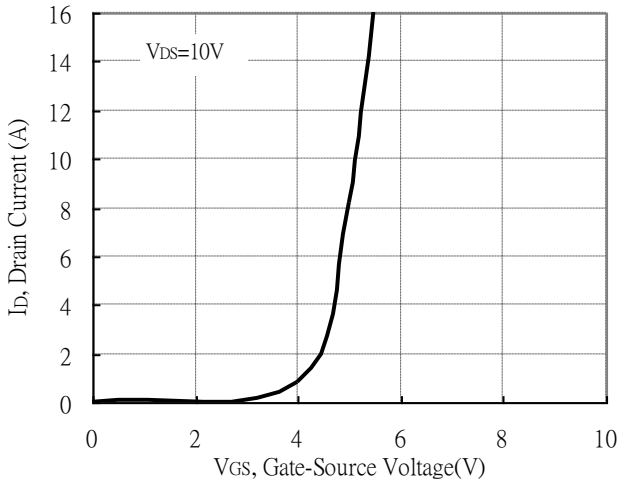


Maximum Drain Current vs Junction Temperature

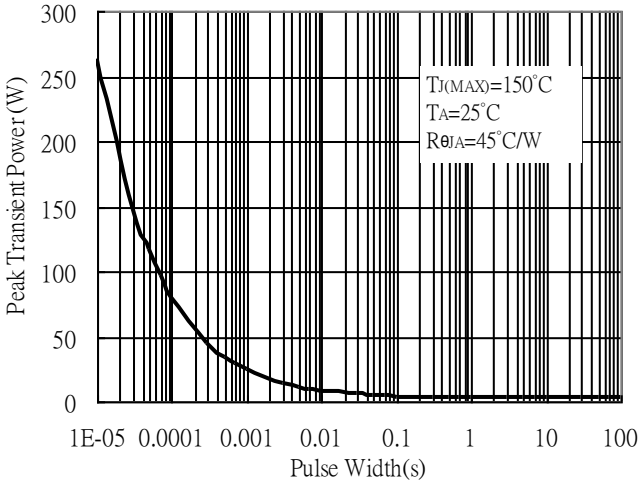


Typical Characteristics(Cont.)

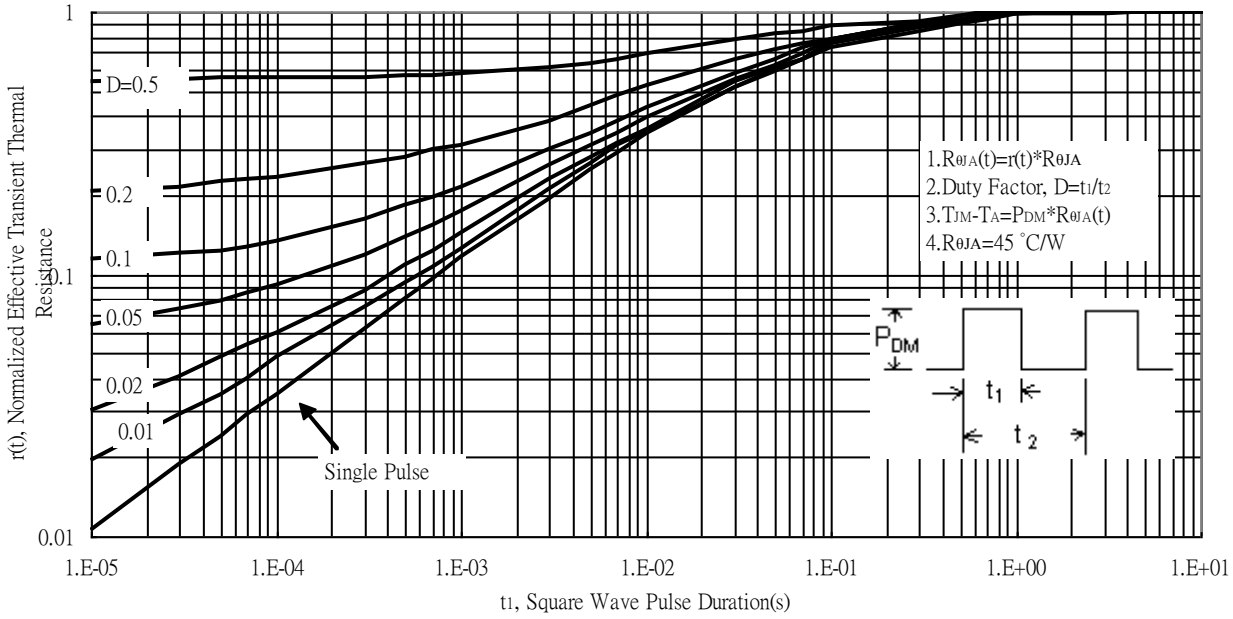
Typical Transfer Characteristics



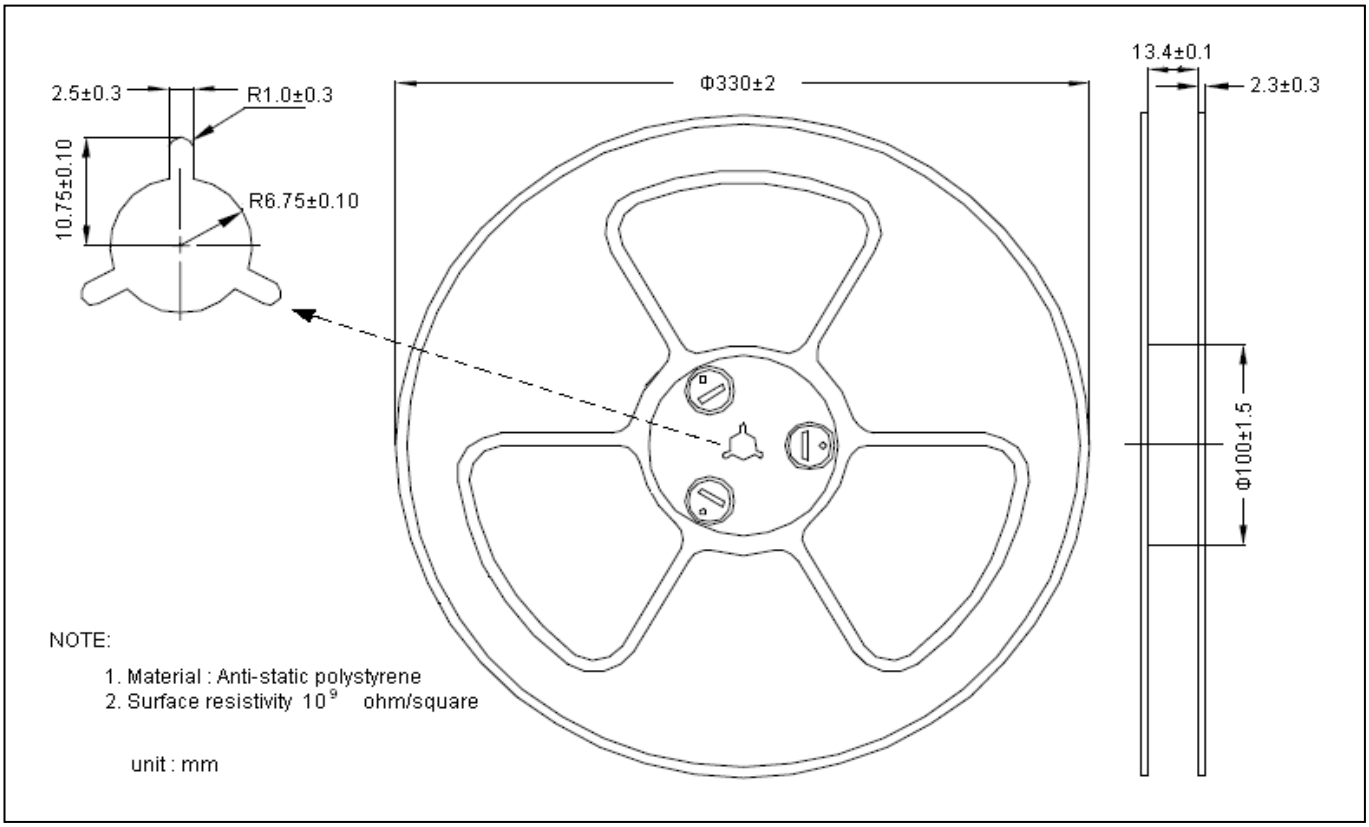
Single Pulse Maximum Power Dissipation



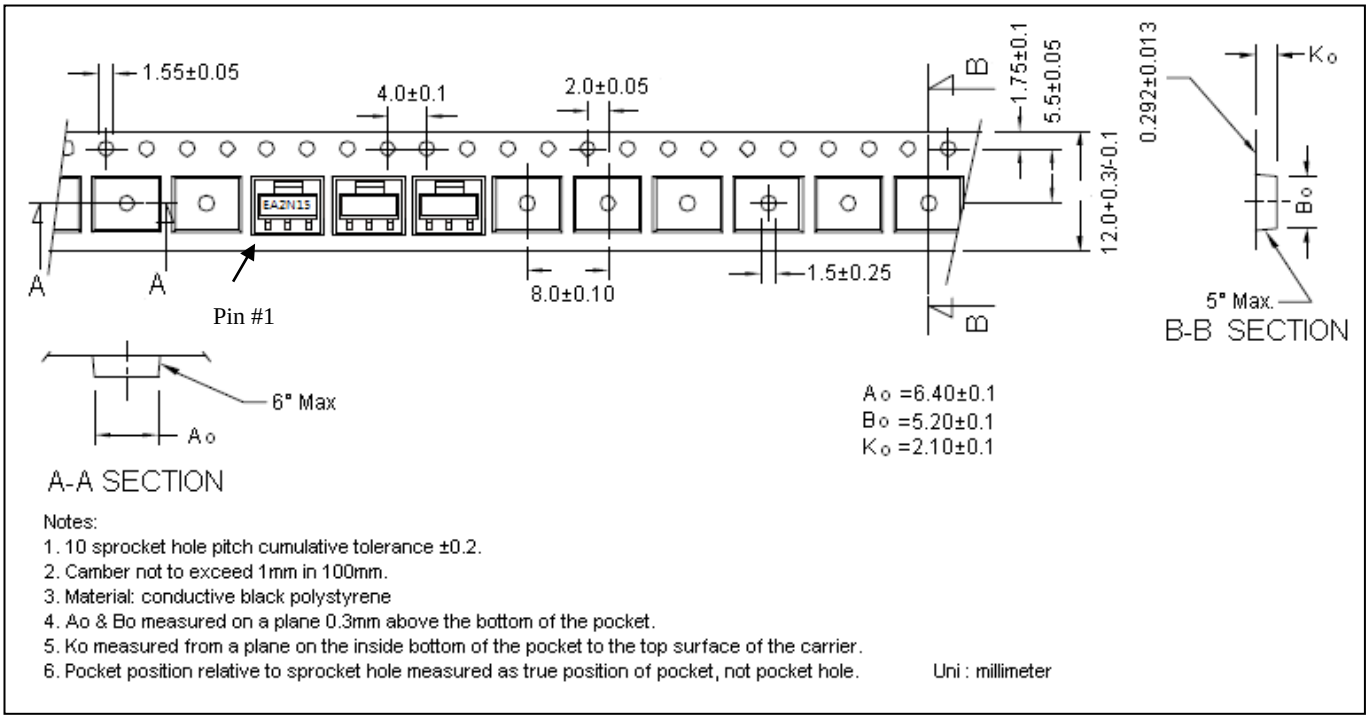
Transient Thermal Response Curves



Reel Dimension



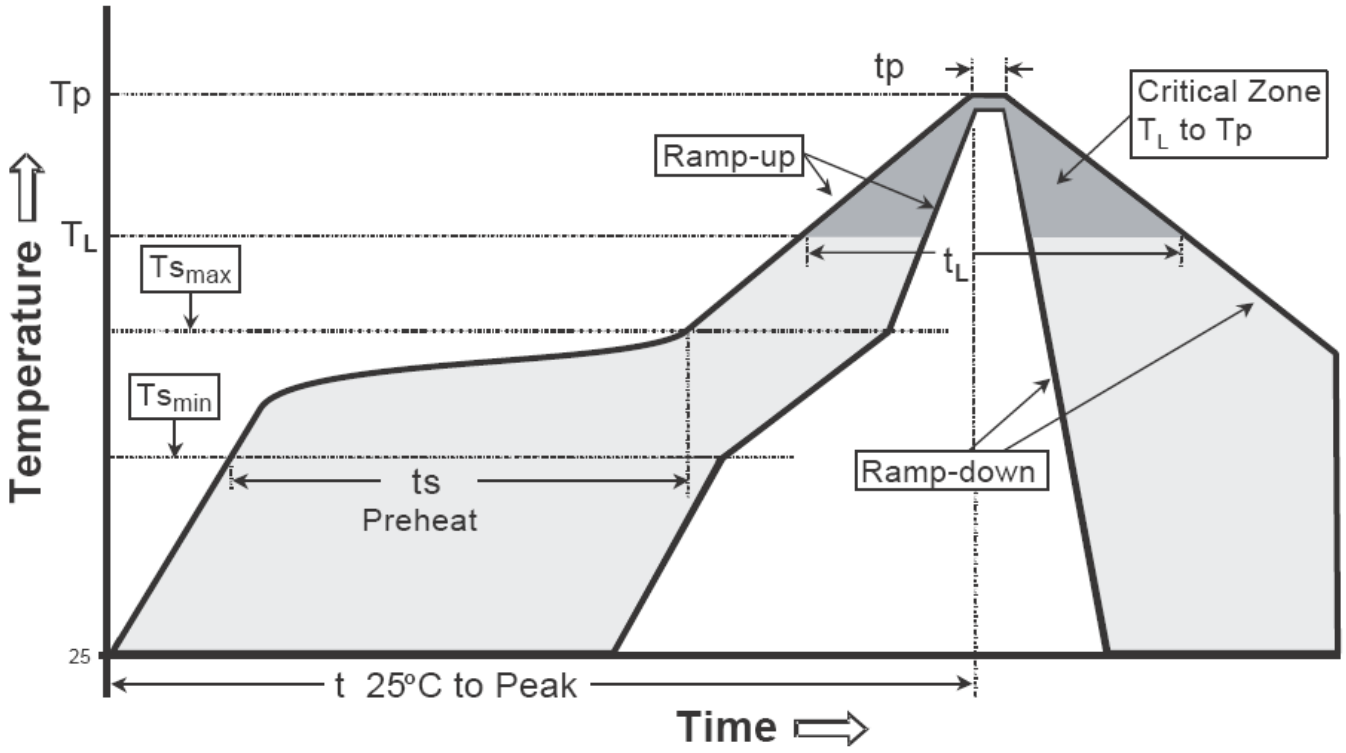
Carrier Tape Dimension



Recommended wave soldering condition

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

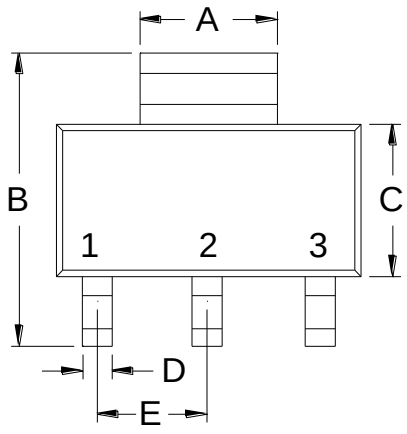
Recommended temperature profile for IR reflow

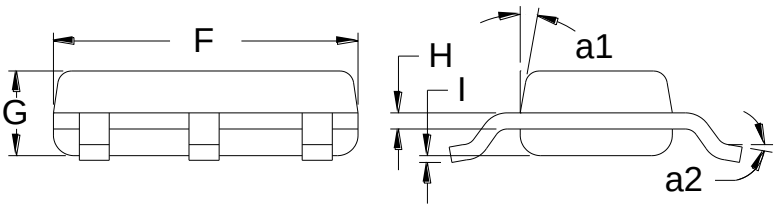


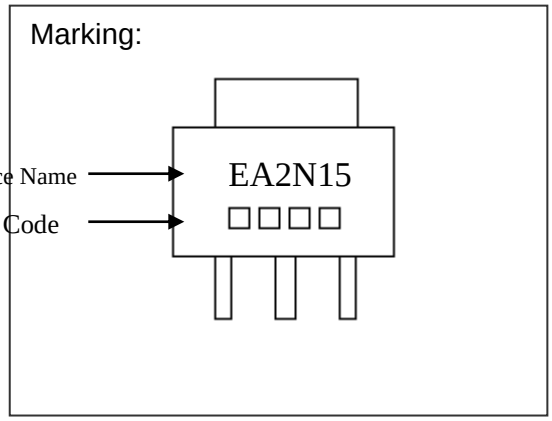
Profile feature	Sn-Pb eutectic Assembly	Pb-free Assembly
Average ramp-up rate (Tsmax to Tp)	3°C/second max.	3°C/second max.
Preheat −Temperature Min(Ts min) −Temperature Max(Ts max) −Time(ts min to ts max)	 100°C 150°C 60-120 seconds	 150°C 200°C 60-180 seconds
Time maintained above: −Temperature (TL) − Time (tL)	 183°C 60-150 seconds	 217°C 60-150 seconds
Peak Temperature(TP)	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-223 Dimension







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

3-Lead SOT-223 Plastic
Surface Mounted Package
CYStek Package Code: L3

Date Code (counting from left to right) :
1st code: year code, the last digit of Christian year
2nd code : month code, Jan→A, Feb→B, Mar→C, Apr→D, May→E, Jun→F, Jul→G, Aug→H, Sep→J, Oct→K, Nov→L, Dec→M
3rd and 4th codes : prodcution serial number, 01~99

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1142	0.1220	2.90	3.10	G	0.0551	0.0709	1.40	1.80
B	0.2638	0.2874	6.70	7.30	H	0.0098	0.0138	0.23	0.35
C	0.1299	0.1457	3.30	3.70	I	0.0008	0.0039	0.02	0.10
D	0.0236	0.0315	0.60	0.80	a1	*13°	-	*13°	-
E	*0.0906	-	*2.30	-	a2	0°	10°	0°	10°
F	0.2480	0.2638	6.30	6.70					

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.