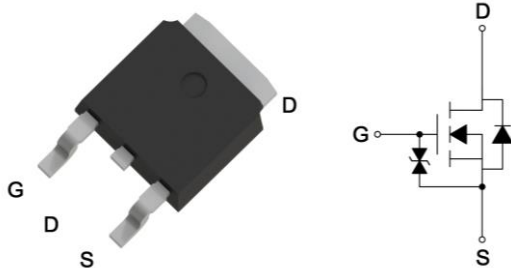


Product Summary

BV_{DS}	100	V
$R_{DS(ON)}$ typ. @ $V_{GS}=10V$, $I_D=2A$	32	mΩ
$R_{DS(ON)}$ typ. @ $V_{GS}=4.5V$, $I_D=2A$	42	
I_D @ $V_{GS}=10V$, $T_C=25^{\circ}C$	19	A
I_D @ $V_{GS}=10V$, $T_A=25^{\circ}C$	5.7	

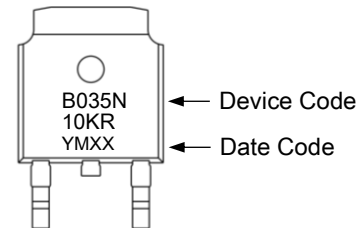
TO-252



Features

- Low Gate Charge
- Fast Switching Characteristic
- Pb-free lead plating and halogen-free
- ESD protected gate

Marking



YMXX: Date Code Marking

Y: Year Code, the last digit of Christian year

M: Month Code

A: Jan	B: Feb	C: Mar	D: Apr	E: May	F: Jun
G: Jul	H: Aug	J: Sep	K: Oct	L: Nov	M: Dec

XX: Production Serial Number, 01~99

Ordering Information

Device	Package	Shipping
MTB035N10KRJ3-0-T3-G	TO-252	2500pcs / Tape & Reel

0: Product rank, zero for no rank products.

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

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

Absolute Maximum Ratings ($T_A=25^{\circ}C$)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V _{DS}	100	V
Gate-Source Voltage		V _{GS}	±20	
Continuous Drain Current @ V _{GS} =10V, T _C =25°C		I _D	19	A
Continuous Drain Current @ V _{GS} =10V, T _C =100°C			12	
Continuous Drain Current @ V _{GS} =10V, T _A =25°C			5.7	
Continuous Drain Current @ V _{GS} =10V, T _A =70°C			4.6	
Pulsed Drain Current		I _{DM}	50	
Continuous Body Diode Forward Current @ T _C =25°C		I _S	19	
Pulsed Body Diode Forward Current @ T _C =25°C		I _{SM}	50	
Avalanche Current @ L=0.1mH		I _{AS}	6	
Avalanche Energy @ L=0.5mH		E _{AS}	6	
Total Power Dissipation	T _C =25°C	P _D	31	W
	T _C =100°C		12	
	T _A =25°C		2.8	
	T _A =70°C		1.8	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55~+150	°C
Steady State Thermal Resistance, Junction-to-Case		R _{θJC}	4	°C/W
Steady State Thermal Resistance, Junction-to-Ambient		R _{θJA}	45	

Electrical Characteristics ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

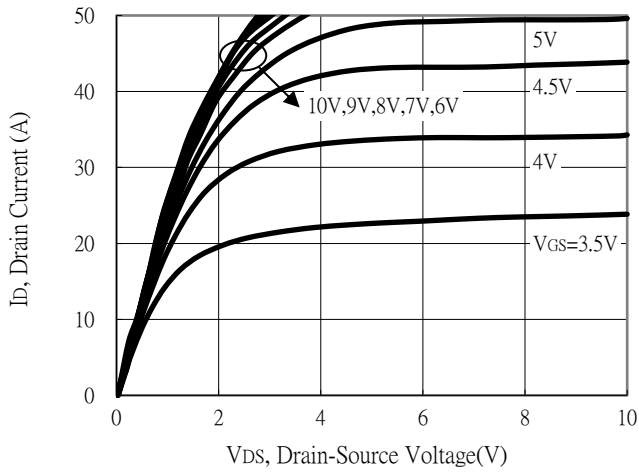
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	100	-	-	V	V _{GS} =0V, I _D =250μA
V _{GS(th)}	1	-	2.5		V _{DS} =V _{GS} , I _D =250μA
G _{FS}	-	5.6	-	S	V _{DS} =10V, I _D =2A
I _{GSS}	-	-	±10	μA	V _{GS} =±16V, V _{DS} =0V
I _{DSS}	-	-	1		V _{DS} =80V, V _{GS} =0V
R _{DS(ON)}	-	32	42	mΩ	V _{GS} =10V, I _D =2A
	-	42	60		V _{GS} =4.5V, I _D =2A
Dynamic					
C _{iss}	-	570	-	pF	V _{DS} =50V, V _{GS} =0V, f=1MHz
C _{oss}	-	68	-		
C _{rss}	-	20	-		
R _g	-	4	-	Ω	f=1MHz
Q _g *d,e	-	5.2	-	nC	V _{DS} =50V, I _D =2A, V _{GS} =4.5V
Q _g *d,e	-	10	-		V _{DS} =50V, I _D =2A, V _{GS} =10V
Q _{gs} *d,e	-	1.7	-		
Q _{gd} *d,e	-	1.9	-		
t _{d(ON)} *d,e	-	6.7	-	ns	V _{DS} =50V, I _D =2A, V _{GS} =10V, R _{GS} =1Ω
t _r *d,e	-	17	-		
t _{d(OFF)} *d,e	-	27	-		
t _f *d,e	-	8.5	-		
Source-Drain Diode					
V _{SD} *d	-	0.8	1.2	V	I _S =2A, V _{GS} =0V
t _{rr}	-	21	-	ns	I _F =2A, di/dt=100A/μs
Q _{rr}	-	15	-	nC	

Note:

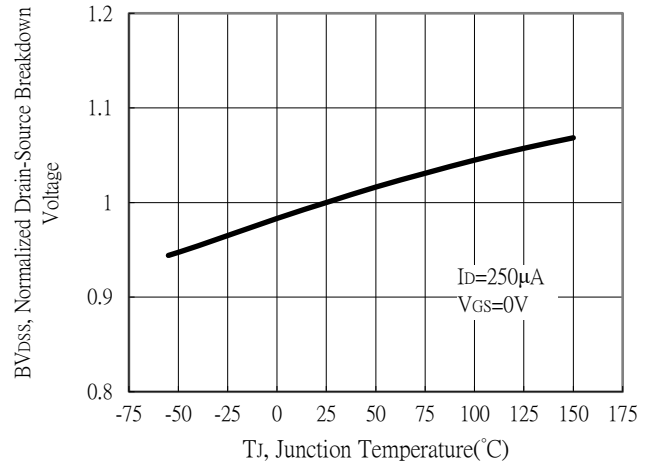
- *a. The power dissipation P_D is based on $T_{J(MAX)}=150^{\circ}\text{C}$, using junction-to-case thermal resistance, and is more useful in setting the upper Dissipation.
- *b. The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz copper, in a still air environment with $T_A=25^{\circ}\text{C}$. The power dissipation P_D is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150°C . The value in any given application depends on the user's specific board design.
- *c. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}=150^{\circ}\text{C}$. Ratings are based on low frequency and low duty cycles to keep initial $T_J=25^{\circ}\text{C}$.
- *d. Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$.
- *e. Independent of operating temperature.

Typical Characteristics

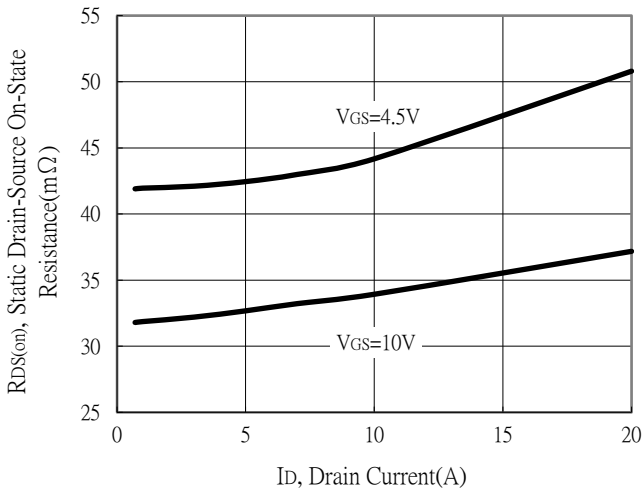
Typical Output Characteristics



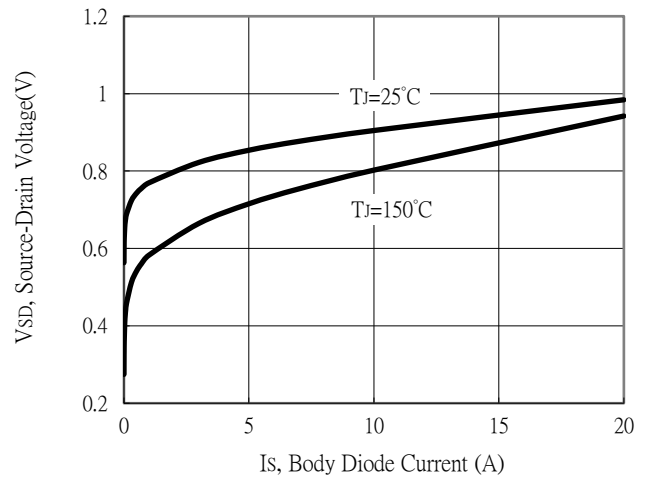
Breakdown Voltage vs Ambient Temperature



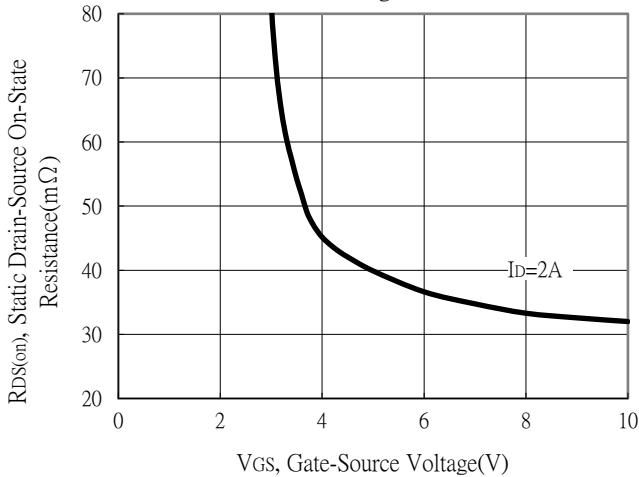
Static Drain-Source On-State resistance vs Drain Current



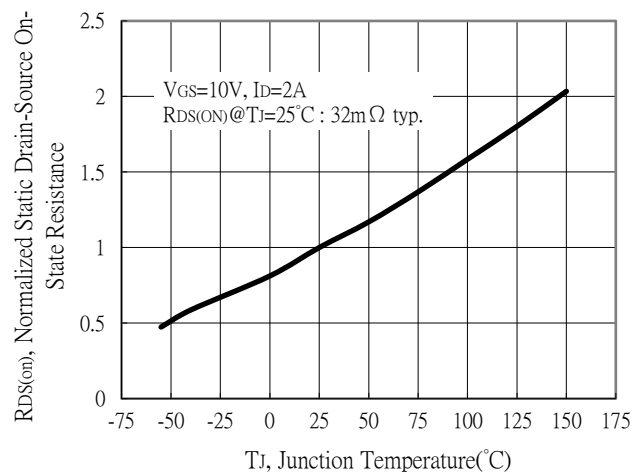
Body Diode Current vs Source-Drain Voltage



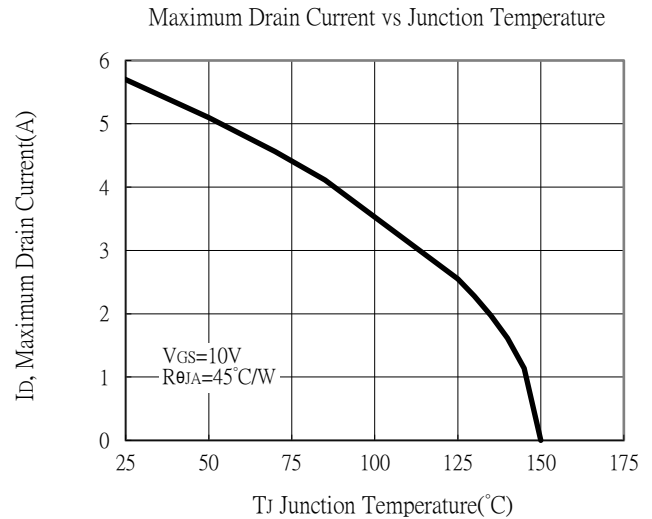
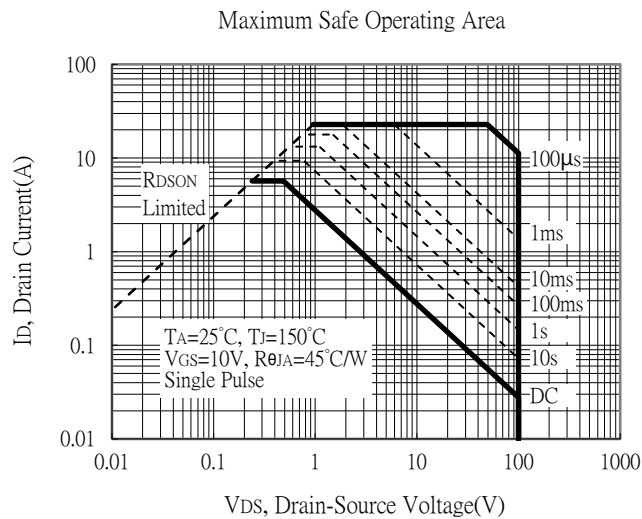
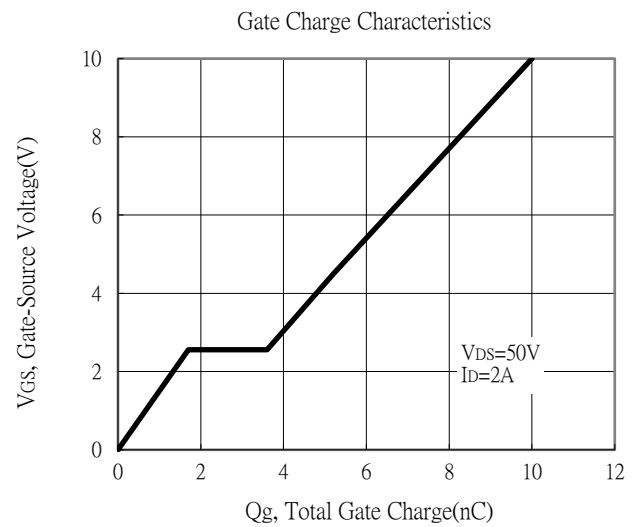
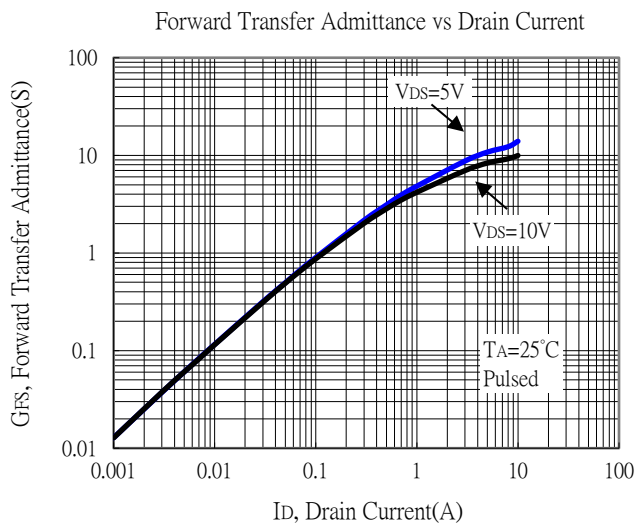
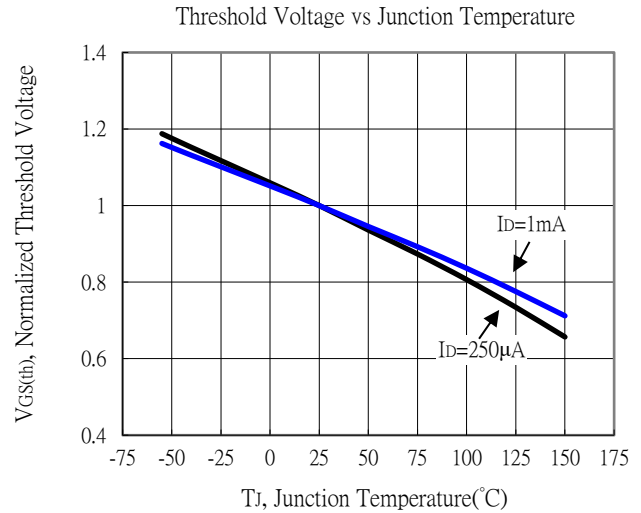
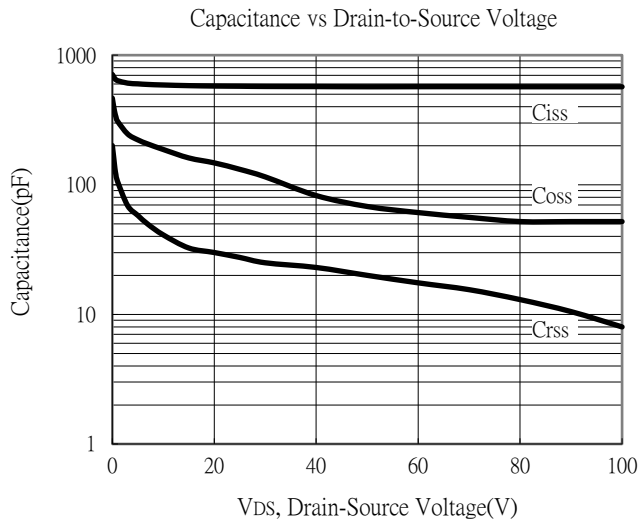
Static Drain-Source On-State Resistance vs Gate-Source Voltage



Drain-Source On-State Resistance vs Junction Temperature

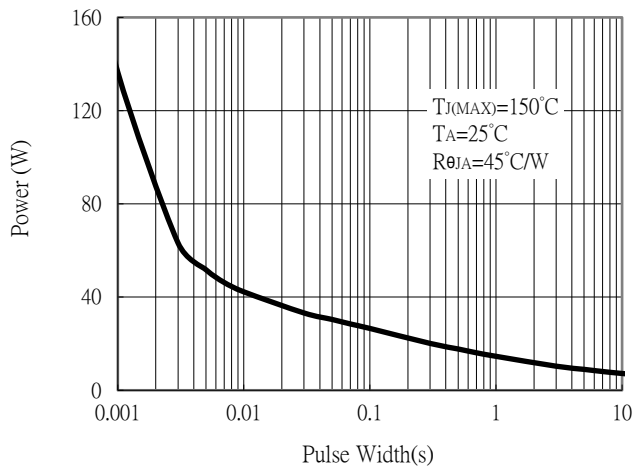


Typical Characteristics

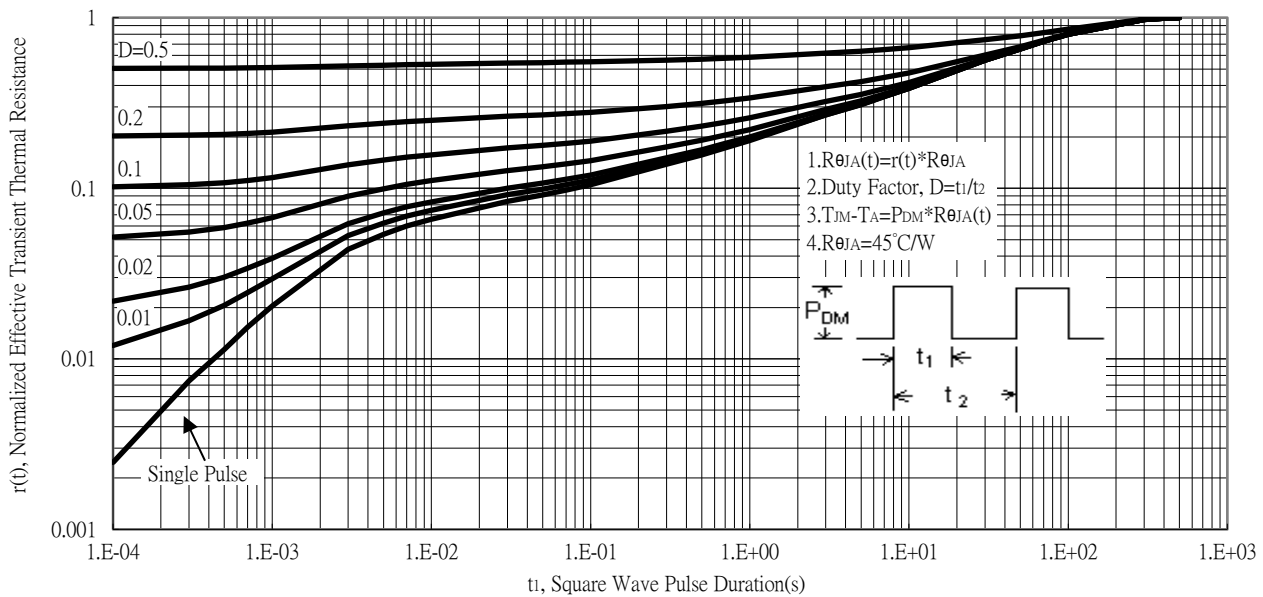


Typical Characteristics

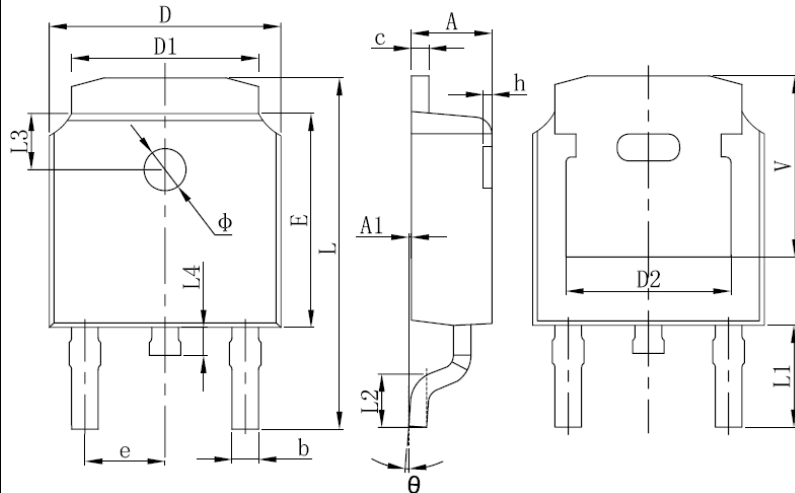
Single Pulse Power Rating, Junction to Ambient



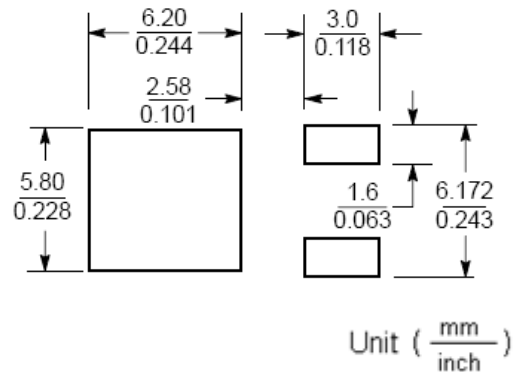
Transient Thermal Response Curves



TO-252 Dimension



3-Lead TO-252 Plastic Surface Mount Package
CYS Package Code: J3



Recommended Soldering Footprint

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.087	0.094	2.200	2.400	L	0.382	0.406	9.712	10.312
A1	0.000	0.005	0.000	0.127	L1	0.114	REF	2.900	REF
b	0.025	0.030	0.635	0.770	L2	0.055	0.067	1.400	1.700
c	0.018	0.023	0.460	0.580	L3	0.63	REF	1.600	REF
D	0.256	0.264	6.500	6.700	L4	0.024	0.039	0.600	1.000
D1	0.201	0.215	5.100	5.460	Φ	0.043	0.051	1.100	1.300
D2	0.190	REF	4.830	REF	θ	0°	8°	0°	8°
E	0.236	0.244	6.000	6.200	h	0.000	0.012	0.000	0.300
e	0.086	0.094	2.186	2.386	V	0.207	REF	5.250	REF

Note:

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

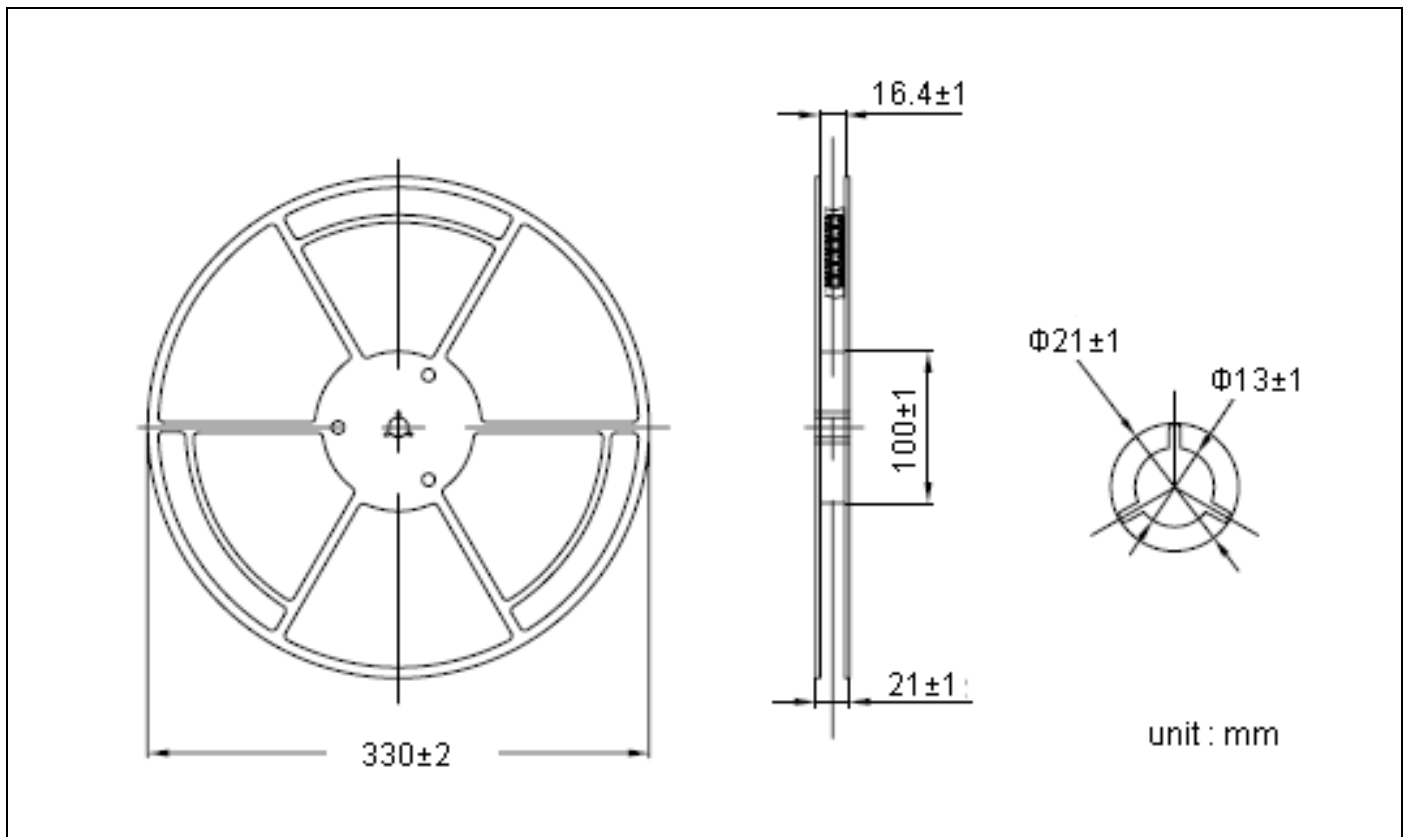
Material:

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

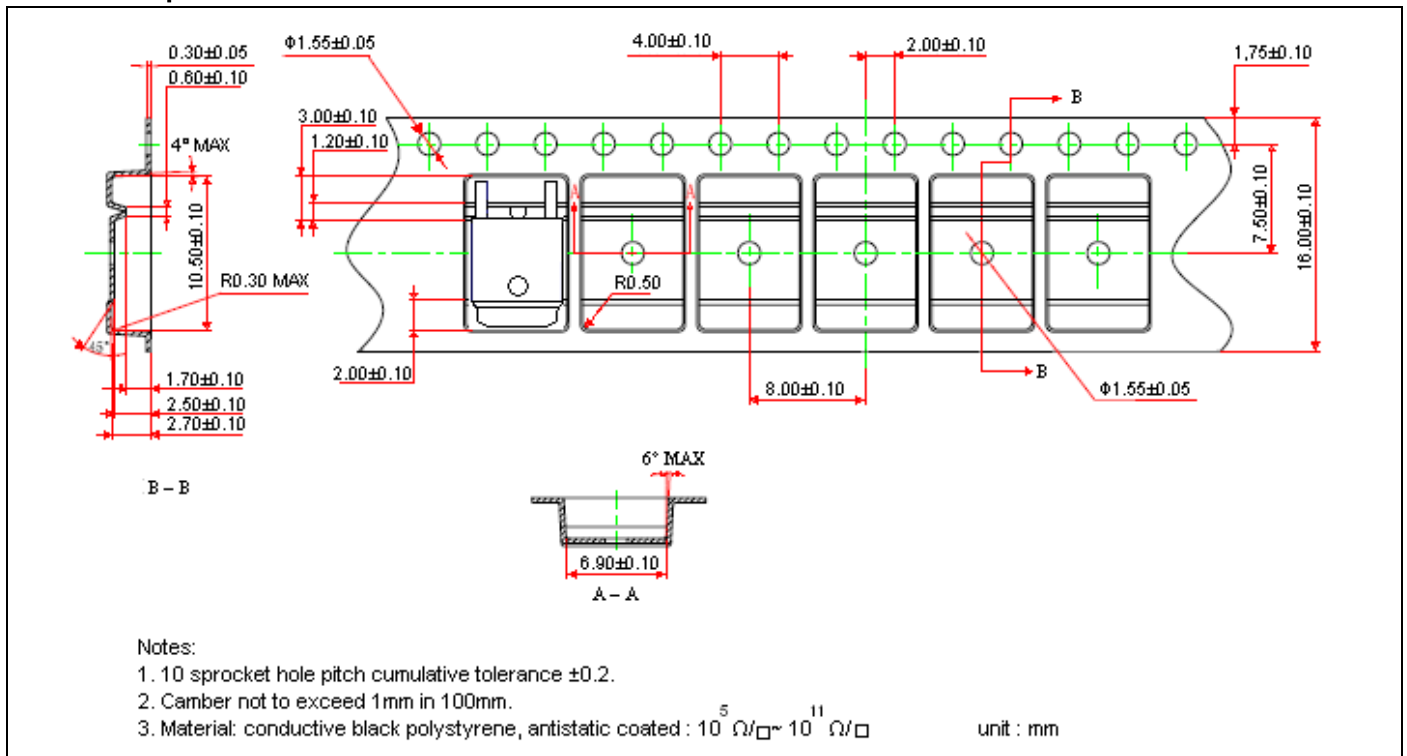
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Reel Dimension



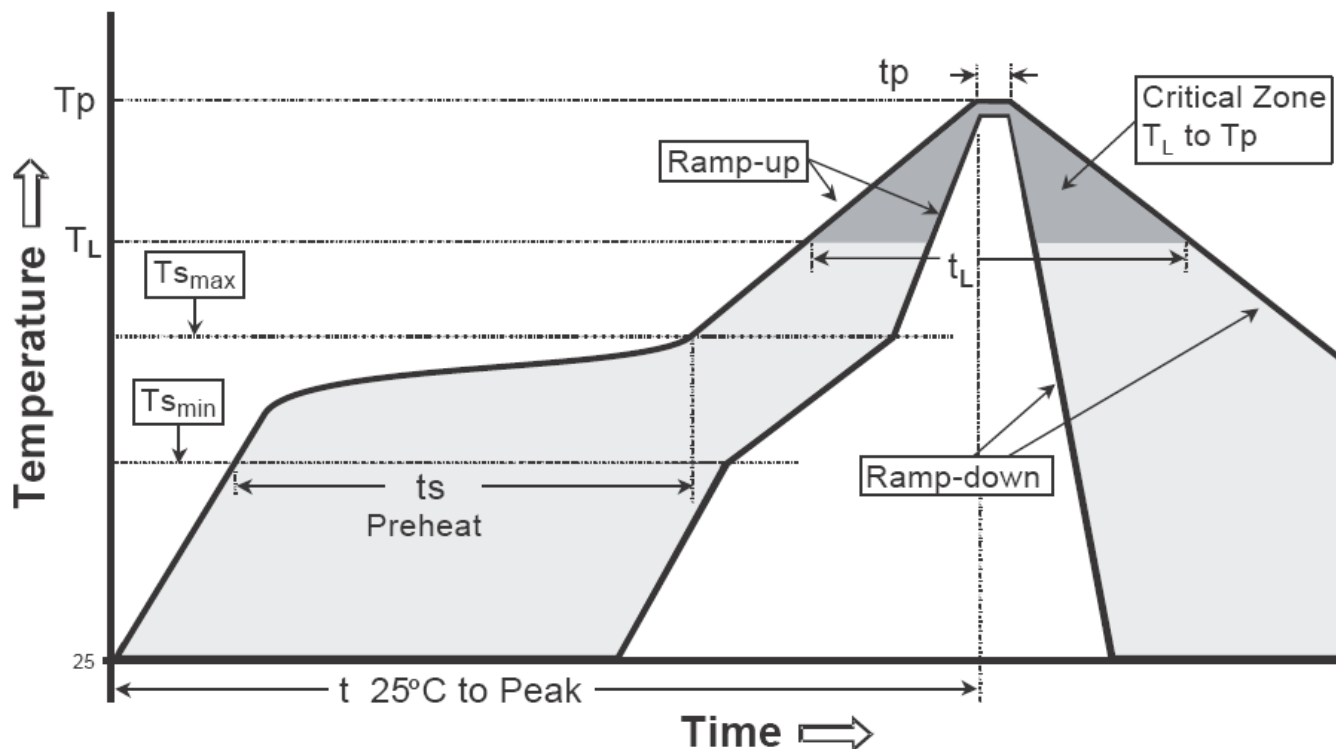
Carrier Tape Dimension



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 (TS max 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.