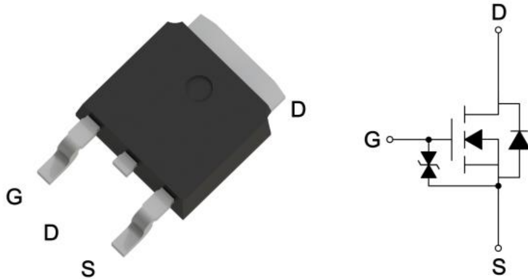
Product Summary

BV_{DSS}	150	V
$R_{DS(ON)}$ typ. @ V_{GS}=10V, I_D=3A	90	mΩ
I_D @ V_{GS}=10V, T_C=25°C	10	A
I_D @ V_{GS}=10V, T_A=25°C	3	

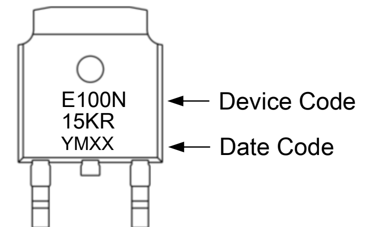
Features

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

TO-252



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
MTE100N15KRJ3-0-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°C)

Parameter		Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current @ V_{GS}=10V, T_C=25°C	*a	I_D	10	A
Continuous Drain Current @ V_{GS}=10V, T_C=100°C	*a		6.3	
Continuous Drain Current @ V_{GS}=10V, T_A=25°C	*b		3	
Continuous Drain Current @ V_{GS}=10V, T_A=70°C	*b		2.4	
Pulsed Drain Current	*c	I_{DM}	30	
Continuous Body Diode Forward Current @ T_C=25°C	*a	I_S	10	
Pulsed Body Diode Forward Current @ T_C=25°C	*a	I_{SM}	30	
Avalanche Current @ L=0.1mH		I_{AS}	7	
Avalanche Energy @ L=0.5mH		E_{AS}	8	mJ
Total Power Dissipation T_C=25°C	*a	P_D	25	W
T_C=100°C	*a		10	
T_A=25°C	*b		2.5	
T_A=70°C	*b		1.6	
Operating Junction and Storage Temperature Range		T_J, T_{stg}	-55~+150	°C
Steady State Thermal Resistance, Junction-to-Case		$R_{\theta JC}$	5.1	°C/W
Steady State Thermal Resistance, Junction-to-Ambient	*b	$R_{\theta JA}$	50	

Electrical Characteristics (T_A=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	-	4	V	V_{DS}=V_{GS}, I_D=250μA
G_{FS}	-	4.1	-	S	V_{DS}=10V, I_D=3A
I_{GSS}	-	-	±10	μA	V_{GS}=±16V, V_{DS}=0V
I_{DSS}	-	-	1	μA	V_{DS}=120V, V_{GS}=0V
$R_{DS(ON)}$	-	90	117	mΩ	V_{GS}=10V, I_D=3A
Dynamic					
C_{iss}	-	420	-	pF	V_{DS}=75V, V_{GS}=0V, f=1MHz
C_{oss}	-	35	-	pF	V_{DS}=75V, V_{GS}=0V, f=1MHz
C_{rss}	-	22	-	pF	V_{DS}=75V, V_{GS}=0V, f=1MHz
R_g	-	6.7	-	Ω	f=1MHz
Q_g *d,e	-	8.4	-	nC	V_{DS}=75V, I_D=3A, V_{GS}=10V
Q_{gs} *d,e	-	2.3	-	nC	V_{DS}=75V, I_D=3A, V_{GS}=10V
Q_{gd} *d,e	-	2.4	-	nC	V_{DS}=75V, I_D=3A, V_{GS}=10V
$t_{d(ON)}$ *d,e	-	8.4	-	ns	V_{DS}=75V, I_D=3A, V_{GS}=10V, R_{GS}=1Ω
tr *d,e	-	17	-	ns	V_{DS}=75V, I_D=3A, V_{GS}=10V, R_{GS}=1Ω
$t_{d(OFF)}$ *d,e	-	20	-	ns	V_{DS}=75V, I_D=3A, V_{GS}=10V, R_{GS}=1Ω
t_f *d,e	-	9.8	-	ns	V_{DS}=75V, I_D=3A, V_{GS}=10V, R_{GS}=1Ω
Source-Drain Diode					
V_{SD} *d	-	0.85	1.2	V	I_S=3A, V_{GS}=0V
t_{rr}	-	40	-	ns	I_F=3A, di/dt=100A/μs
Q_{rr}	-	74	-	nC	I_F=3A, di/dt=100A/μs

Note:

*a. The power dissipation P_D is based on $T_{J(MAX)}$=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper Dissipation.

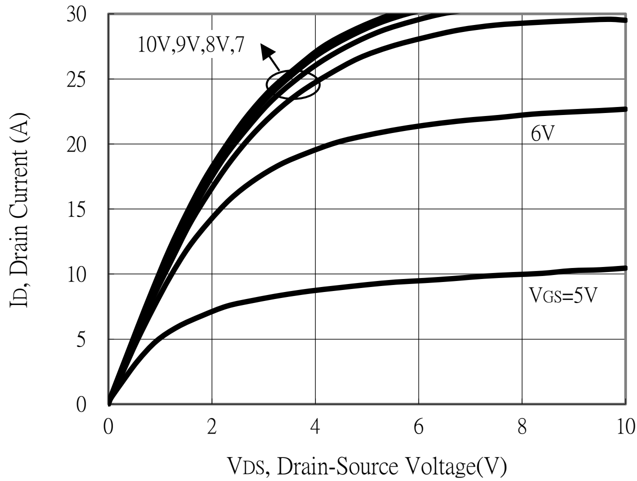
*b. The value of $R_{θJA}$ is measured with the device mounted on 1in² FR-4 board with 2oz copper, in a still air environment with T_A=25°C. The power dissipation P_D is based on $R_{θJA}$ and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.

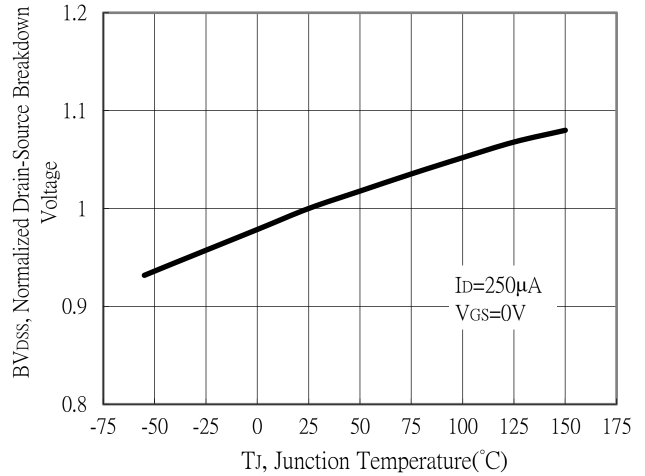
*c. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150°C. Ratings are based on low frequency and low duty cycles to keep initial T_J=25°C.

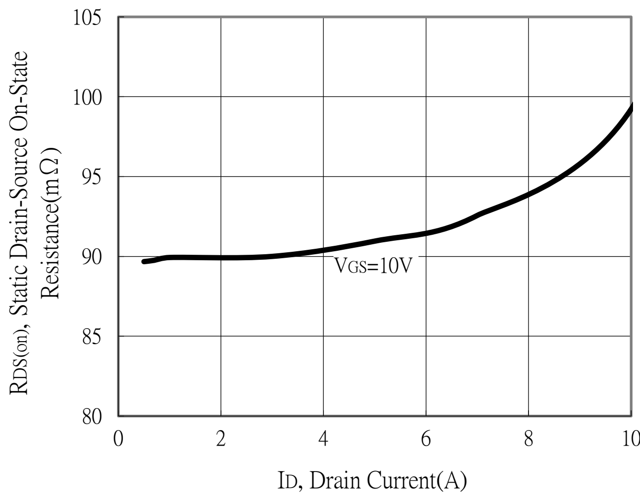
*d. Pulse Test : Pulse Width≤300μs, Duty Cycle≤2%.

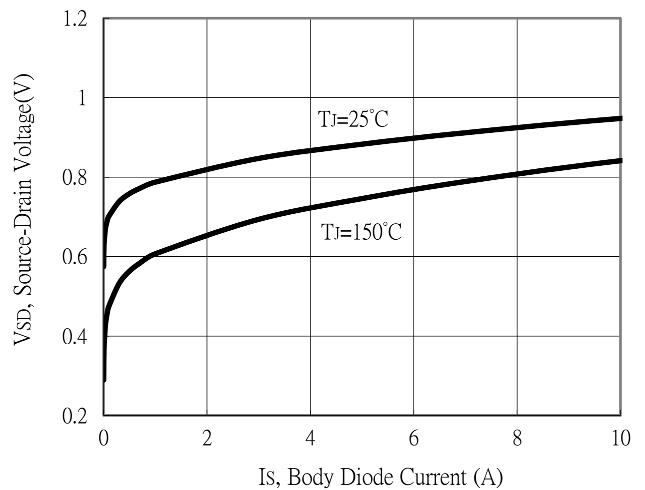
*e. Independent of operating temperature.

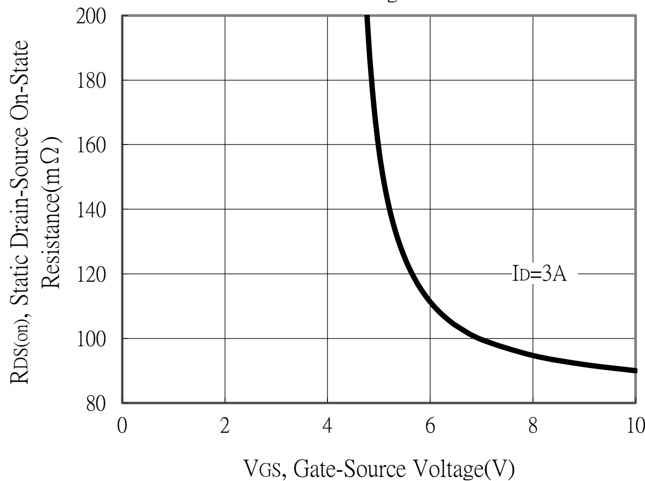
Typical Characteristics

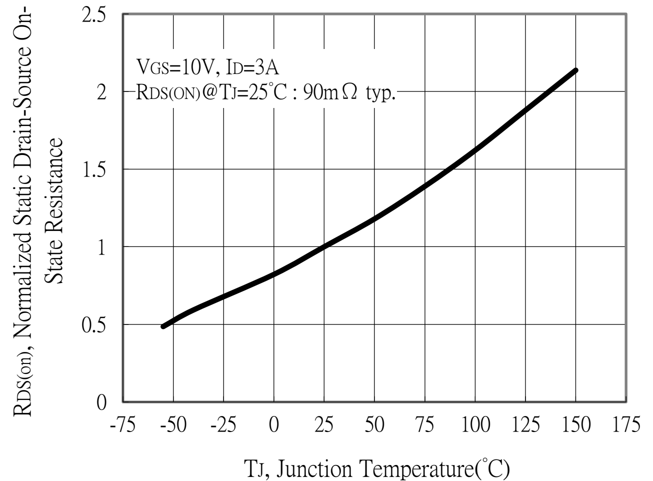












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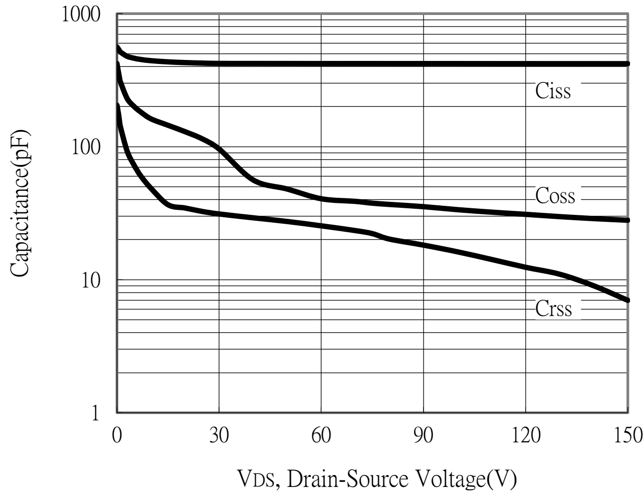

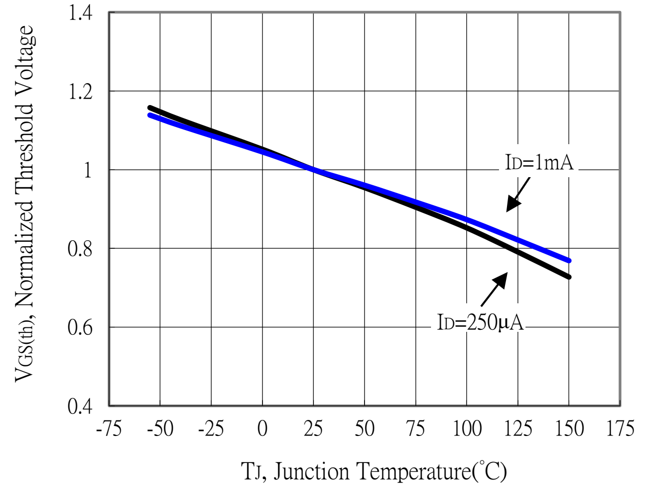

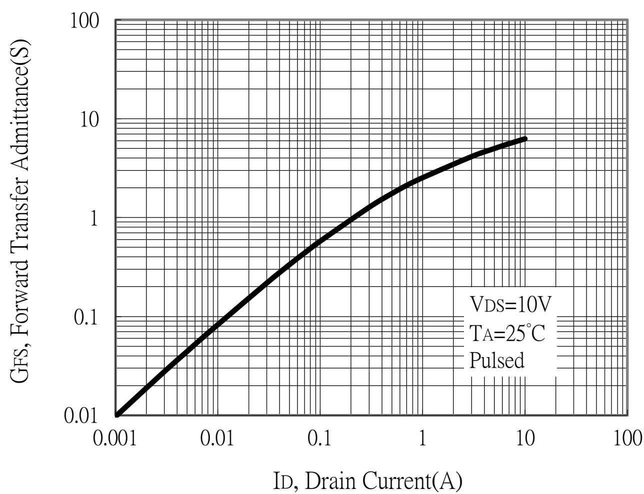

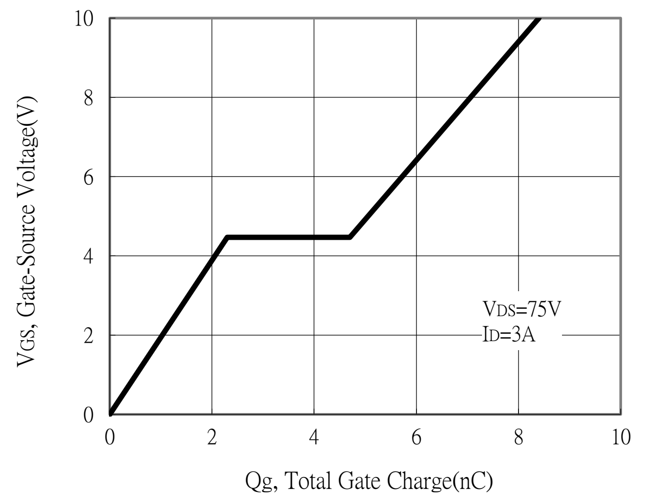

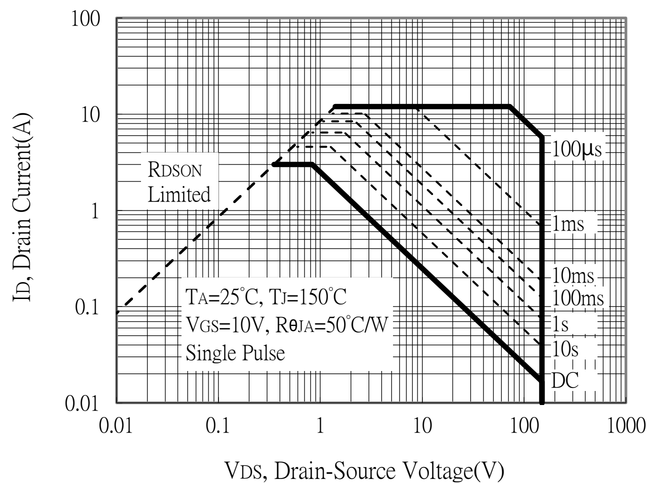

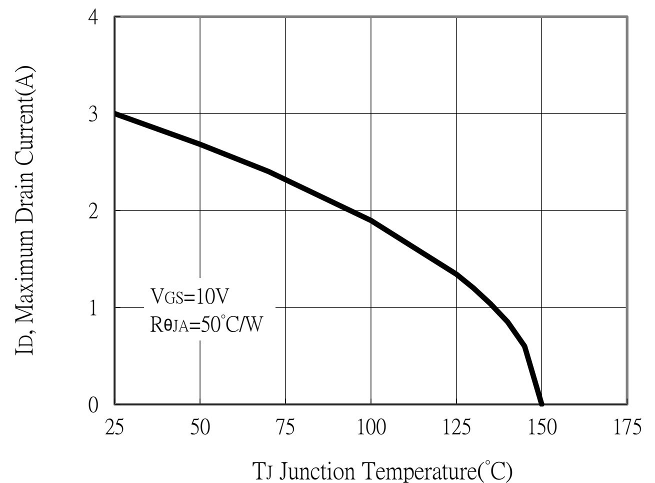

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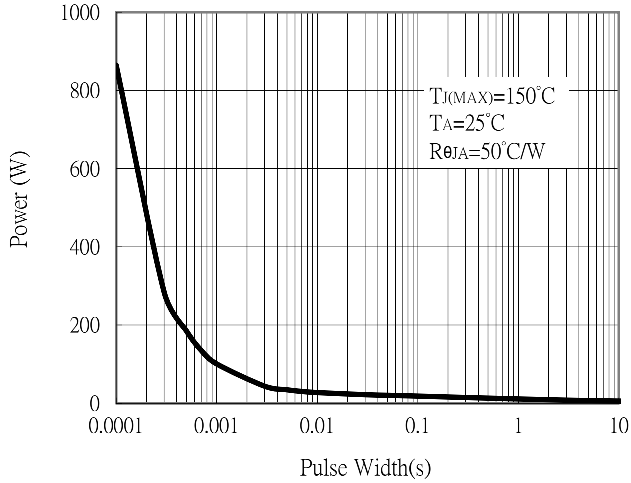
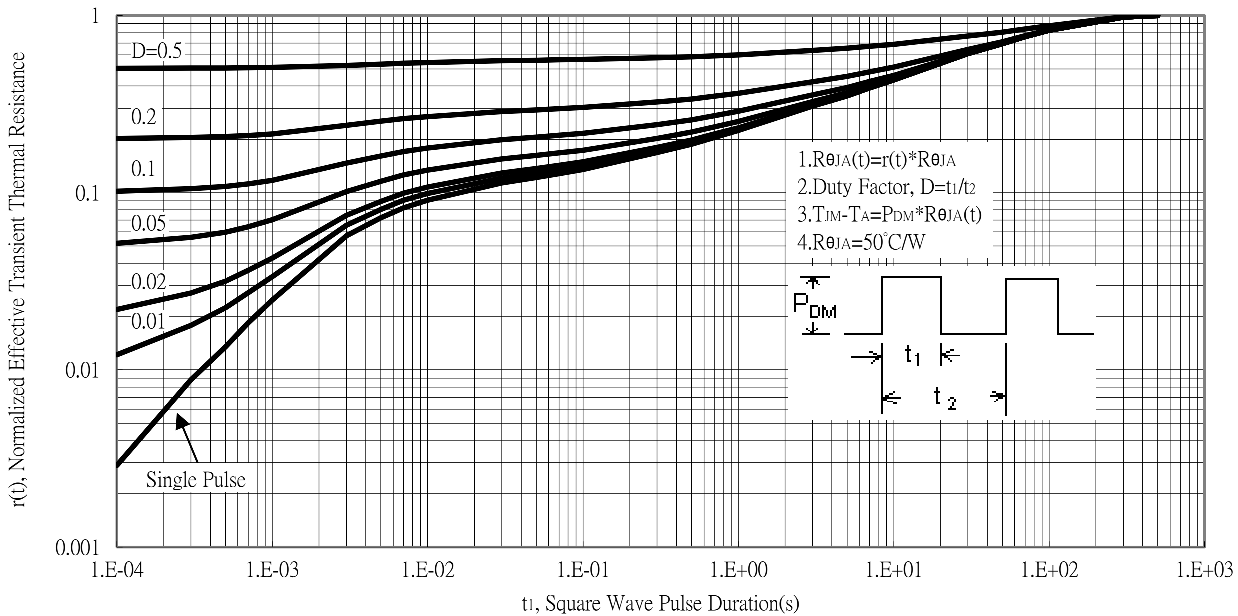
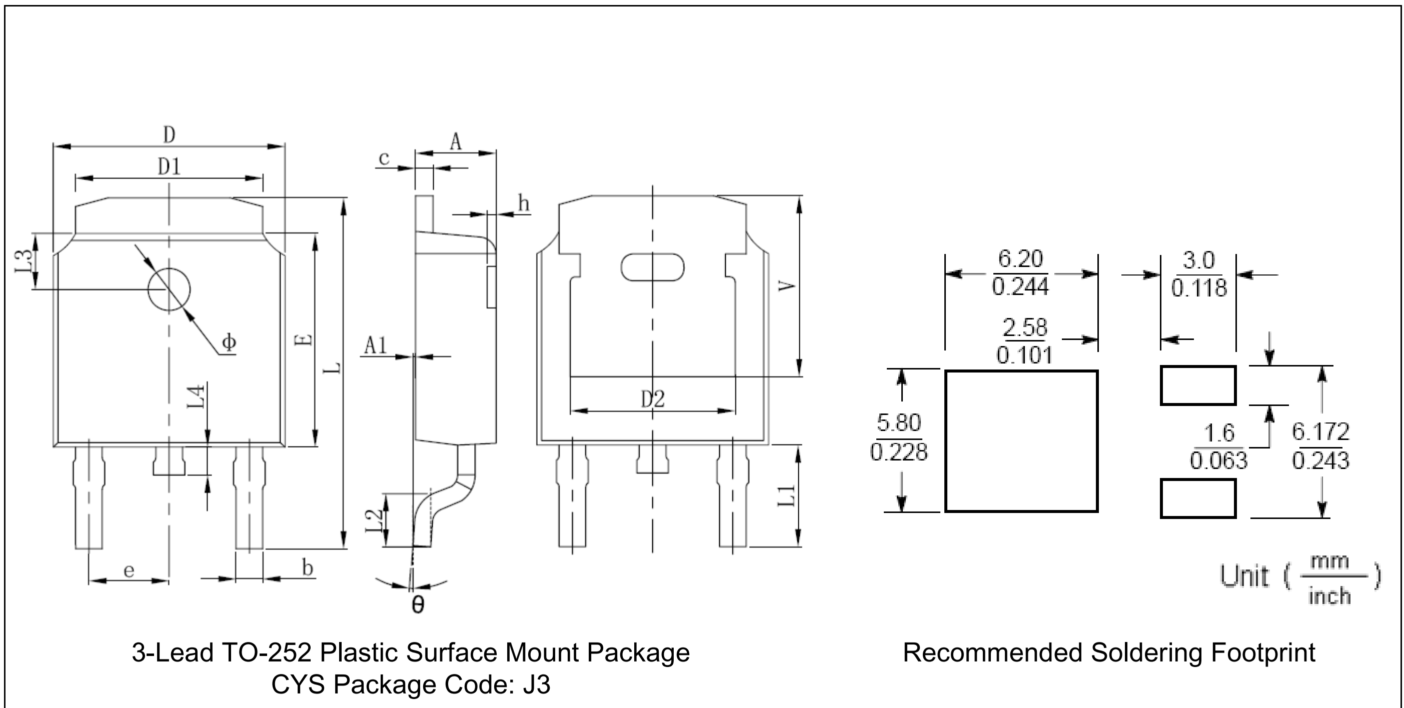




TO-252 Dimension



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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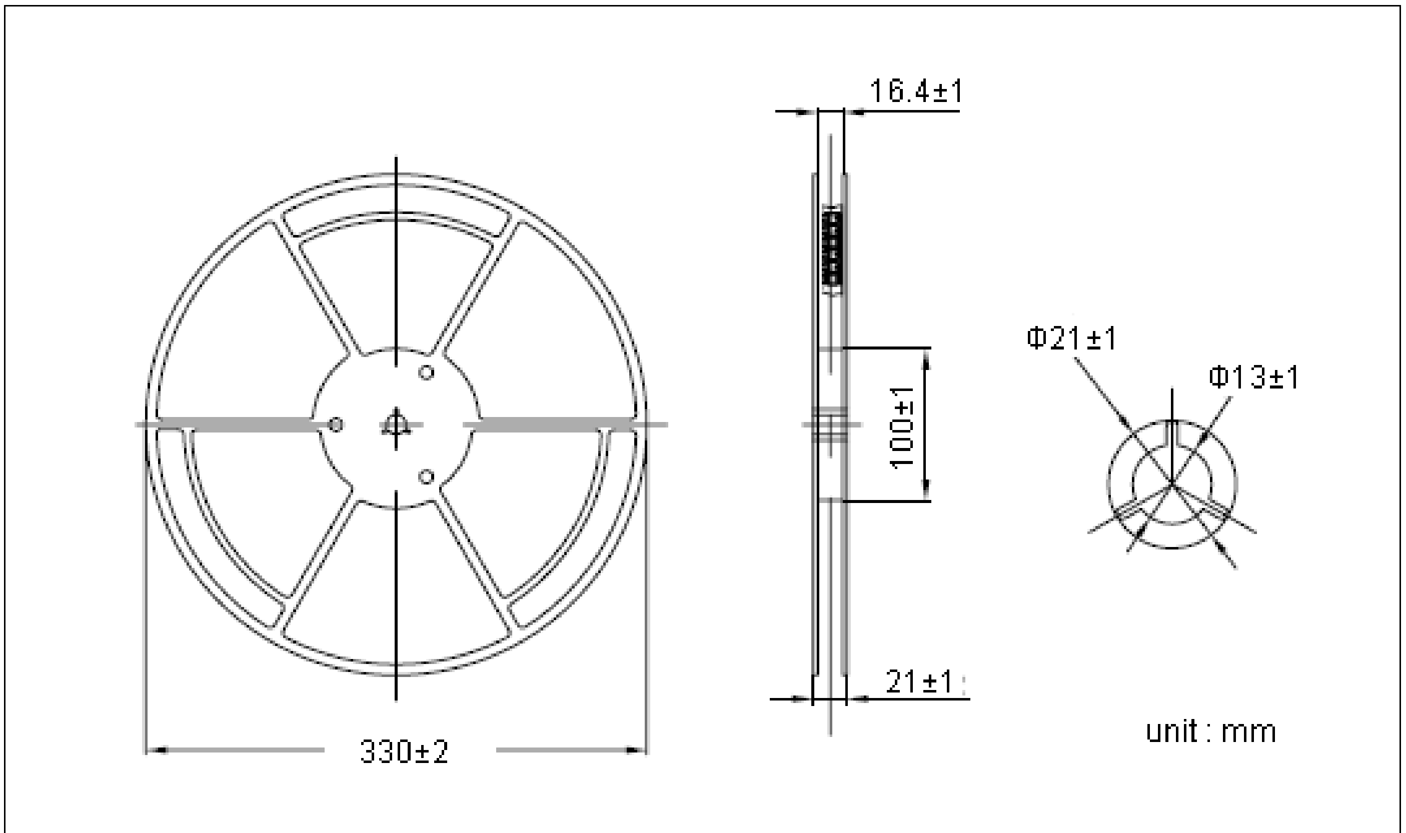
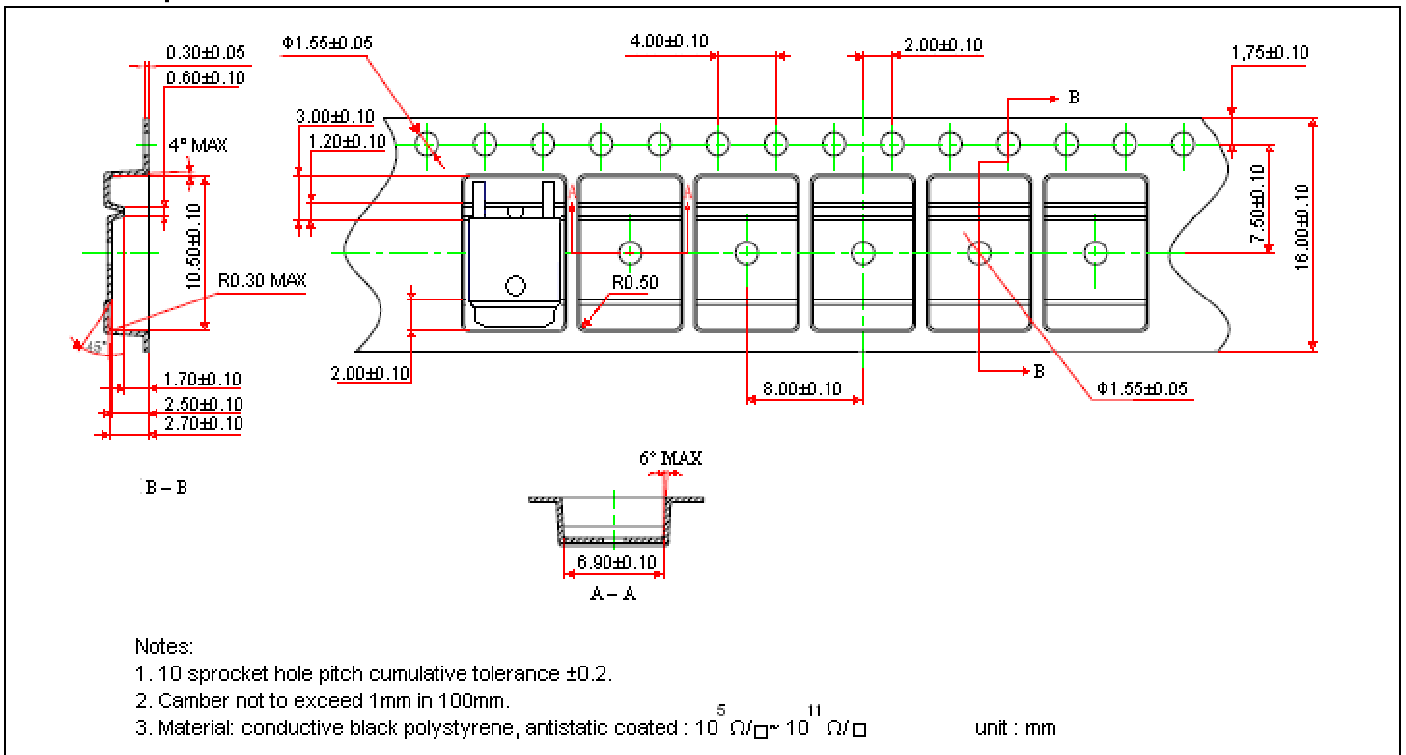
Reel Dimension



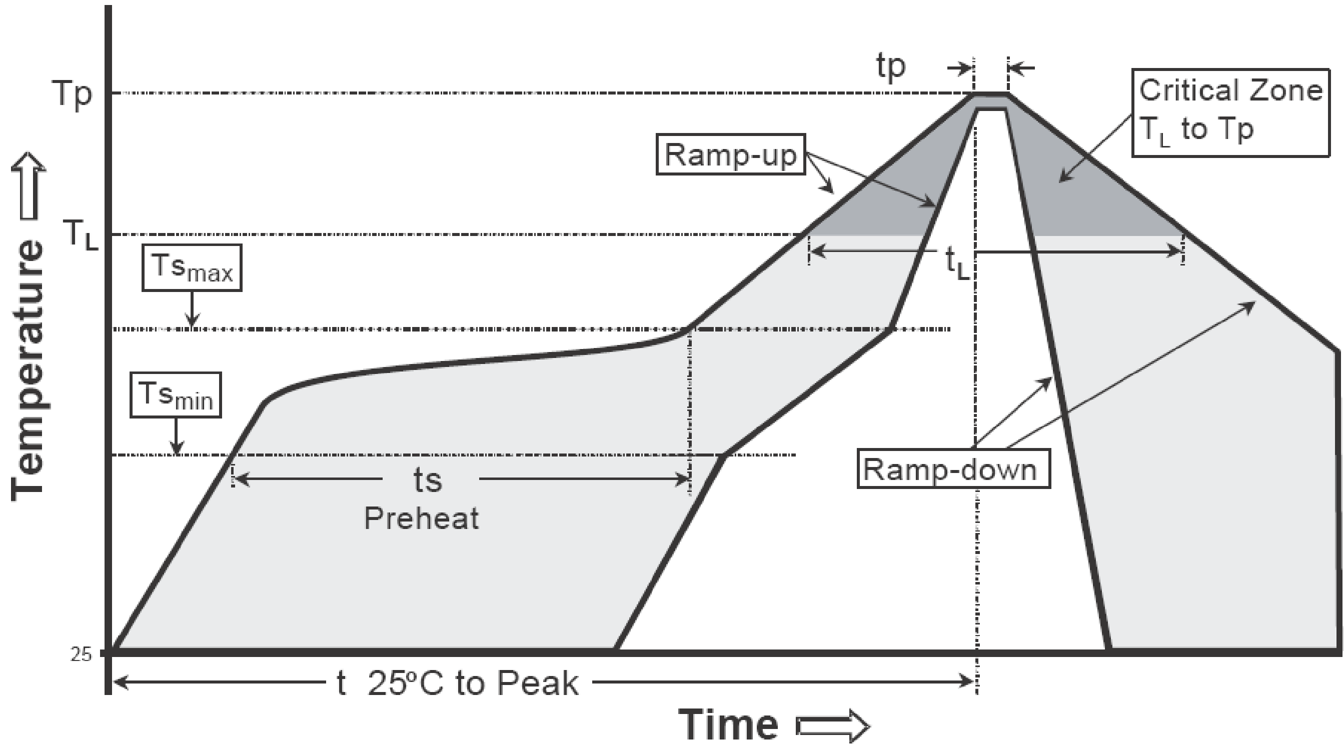
Carrier Tape Dimension



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 (T_S max to T_P)	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 (t_P)	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.