

## N-Channel Enhancement Mode Power MOSFET

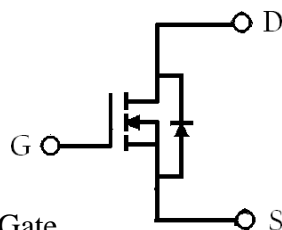
### Features:

- Simple Drive Requirement
- Repetitive Avalanche Rated
- Fast Switching Characteristic
- RoHS compliant package

TO-252(DPAK)



<b>BV<sub>DSS</sub></b>	<b>100V</b>
<b>I<sub>D</sub>@V<sub>GS</sub>=10V, T<sub>C</sub>=25°C</b>	<b>33A</b>
<b>R<sub>DS(ON)</sub>@V<sub>GS</sub>=10V, I<sub>D</sub>=10A</b>	<b>31mΩ (typ)</b>
<b>R<sub>DS(ON)</sub>@V<sub>GS</sub>=4.5V, I<sub>D</sub>=10A</b>	<b>39mΩ (typ)</b>



G : Gate  
D : Drain  
S : Source

### Ordering Information

Device	Package	Shipping
KJD30N10	TO-252 (Pb-free lead plating and halogen-free package)	2500 pcs / Tape & Reel

## Absolute Maximum Ratings (T<sub>c</sub>=25°C, unless otherwise noted)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V <sub>DS</sub>	100	V
Gate-Source Voltage	V <sub>GS</sub>	±20	
Continuous Drain Current @ T <sub>c</sub> =25°C, V <sub>GS</sub> =10V	I <sub>D</sub>	33	A
Continuous Drain Current @ T <sub>c</sub> =100°C, V <sub>GS</sub> =10V		23	
Pulsed Drain Current (Note 1)	I <sub>DM</sub>	90	
Avalanche Current	I <sub>AS</sub>	32	
Avalanche Energy @ L=0.3mH, I <sub>D</sub> =32A, R <sub>G</sub> =25Ω	E <sub>AS</sub>	154	mJ
Repetitive Avalanche Energy @ L=0.05mH (Note 2)	E <sub>AR</sub>	12	
Total Power Dissipation @ T <sub>c</sub> =25°C	P <sub>D</sub>	115	W
Total Power Dissipation @ T <sub>c</sub> =100°C		57.5	
Operating Junction and Storage Temperature Range	T <sub>j</sub> , T <sub>stg</sub>	-55~+175	°C

Note : 1. Pulse width limited by maximum junction temperature.  
2. Duty cycle ≤ 1%.

## Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R <sub>th,j-c</sub>	1.3	°C/W
Thermal Resistance, Junction-to-ambient, max	R <sub>th,j-a</sub>	50 (Note)	
Thermal Resistance, Junction-to-ambient, max	R <sub>th,j-a</sub>	110	

Note : When mounted on the minimum pad size recommended (PCB mount).

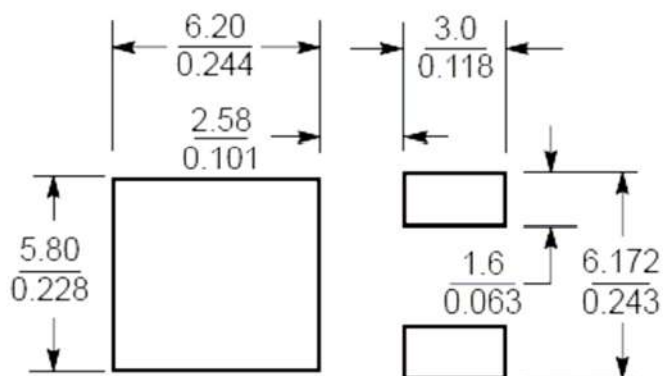
## Characteristics (T<sub>c</sub>=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
<b>Static</b>					
BV <sub>DSS</sub>	100	-	-	V	V <sub>GS</sub> =0V, I <sub>D</sub> =250μA
V <sub>GS(th)</sub>	1.5	-	2.5		V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> =250μA
I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> =±20, V <sub>DS</sub> =0V
I <sub>DSS</sub>	-	-	1	μA	V <sub>DS</sub> = 80V, V <sub>GS</sub> = 0V
	-	-	25		V <sub>DS</sub> = 80V, V <sub>GS</sub> = 0V, T <sub>j</sub> =125°C
*R <sub>DS(ON)</sub>	-	31	40	mΩ	V <sub>GS</sub> = 10V, I <sub>D</sub> =10A
	-	39	55		V <sub>GS</sub> = 4.5V, I <sub>D</sub> =10A
*G <sub>FS</sub>	-	24	-	S	V <sub>DS</sub> = 5V, I <sub>D</sub> =10A
<b>Dynamic</b>					
*Q <sub>g</sub>	-	22.4	-	nC	V <sub>DS</sub> =80V, I <sub>D</sub> =25A, V <sub>GS</sub> =10V
*Q <sub>gs</sub>	-	3	-		
*Q <sub>gd</sub>	-	9.1	-		
*t <sub>d(ON)</sub>	-	10	-	ns	V <sub>DS</sub> =50V, I <sub>D</sub> =1A, V <sub>GS</sub> =10V, R <sub>GS</sub> =6Ω
*t <sub>r</sub>	-	18.2	-		
*t <sub>d(OFF)</sub>	-	43.6	-		
*t <sub>f</sub>	-	21.2	-		

Ciss	-	866	-	pF	VGS=0V, VDS=25V, f=1MHz
Coss	-	129	-		
Crss	-	62	-		
Source-Drain Diode					
*IS	-	-	33	A	
*ISM	-	-	90		
*VSD	-	0.7	1	V	IS=1A, VGS=0V
*trr	-	34	-	ns	IF=25A, VGS=0, dIF/dt=100A/μs
*Qrr	-	53	-	nC	

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

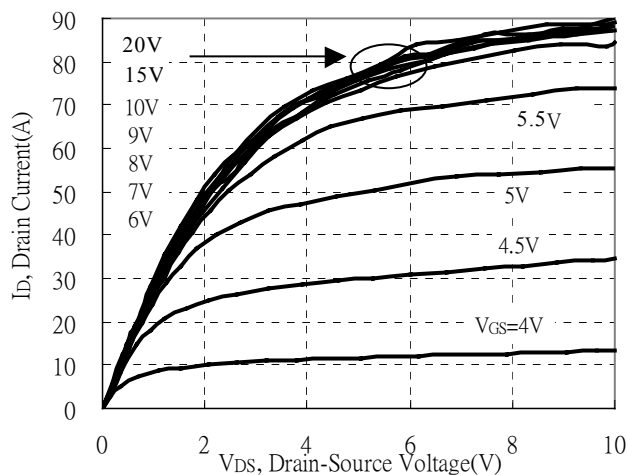
## Recommended soldering footprint



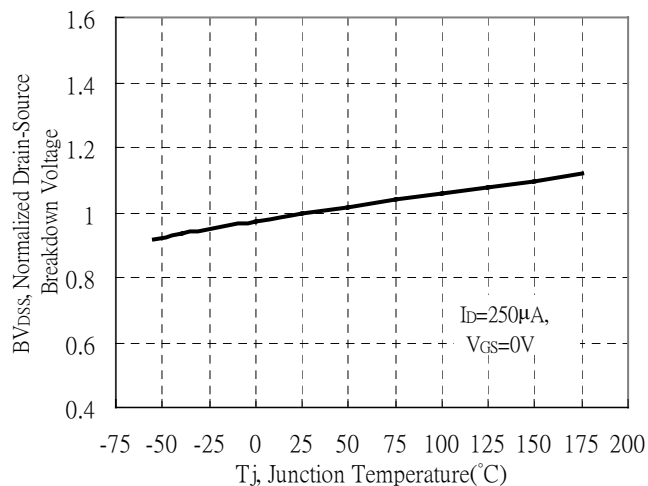
Unit (  $\frac{\text{mm}}{\text{inch}}$  )

## Typical Characteristics

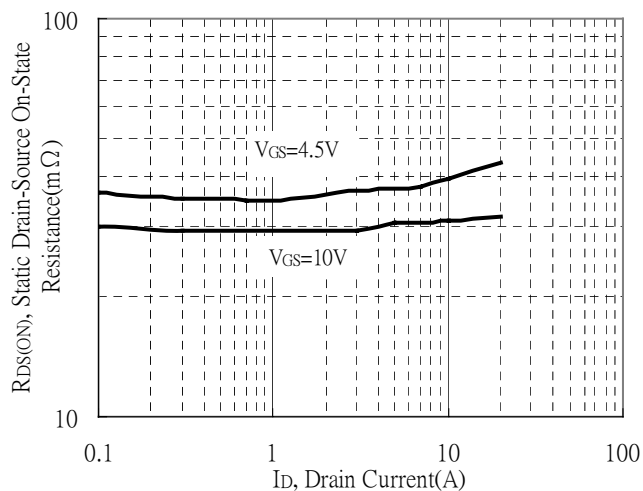
Typical Output Characteristics



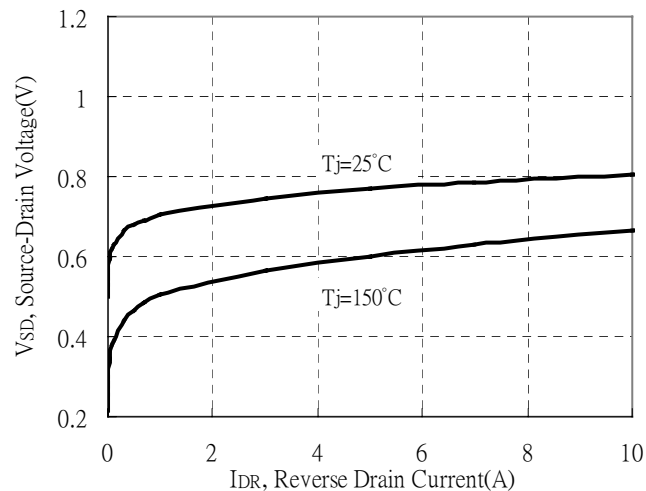
Breakdown Voltage vs Ambient Temperature



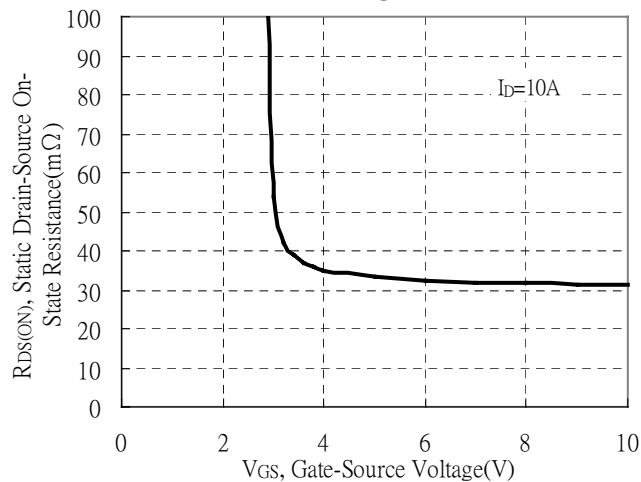
Static Drain-Source On-State resistance vs Drain Current



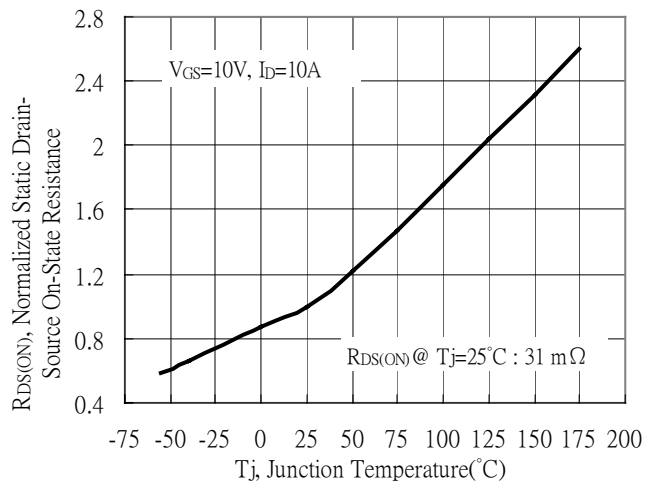
Reverse Drain Current vs Source-Drain Voltage



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

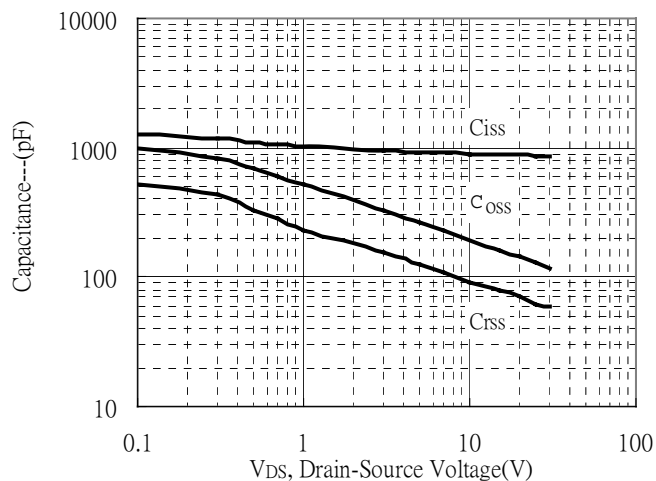


Drain-Source On-State Resistance vs Junction Temperature

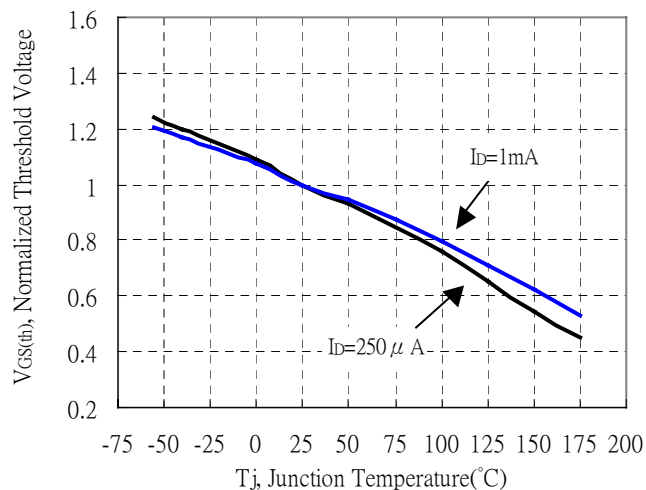


## Typical Characteristics(Cont.)

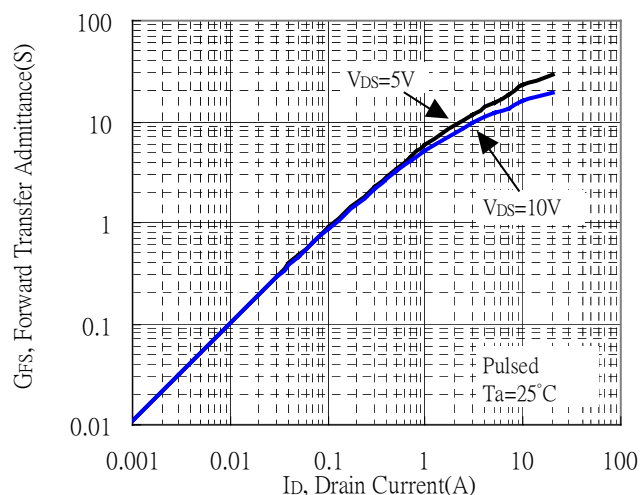
Capacitance vs Drain-to-Source Voltage



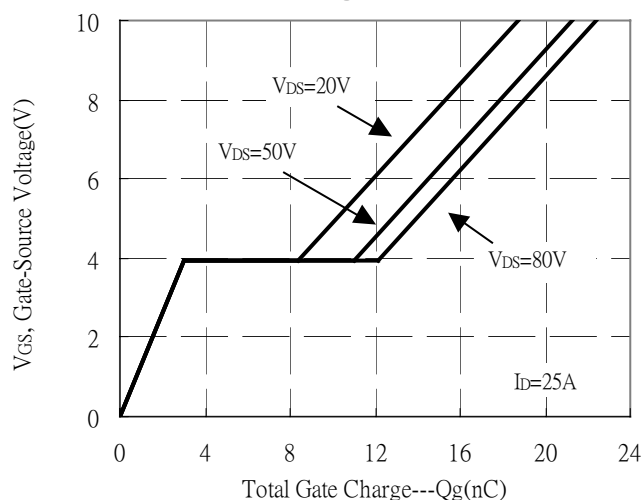
Threshold Voltage vs Junction Temperature



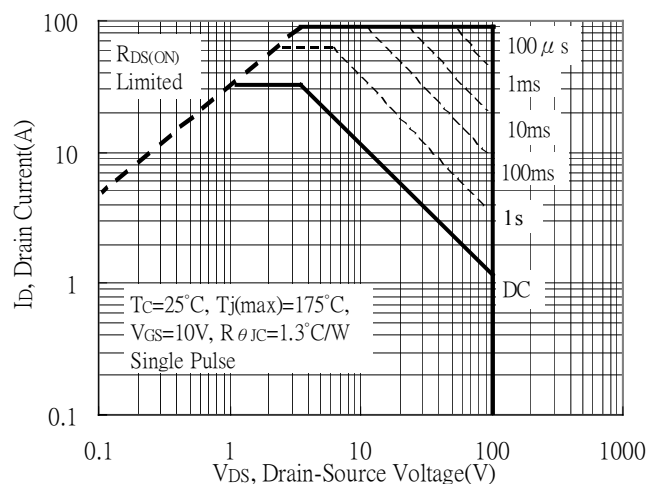
Forward Transfer Admittance vs Drain Current



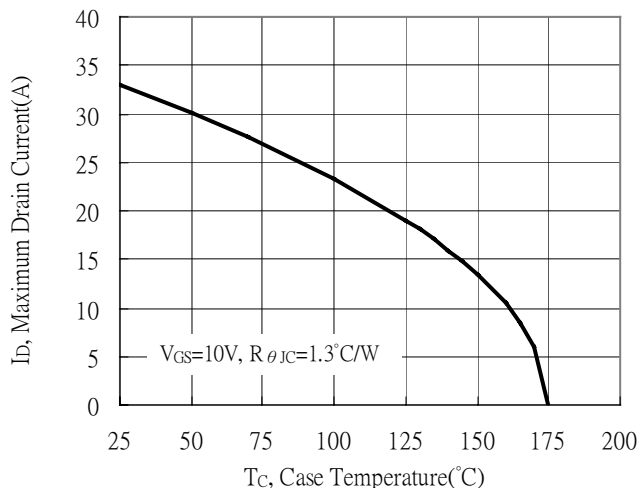
Gate Charge Characteristics



Maximum Safe Operating Area

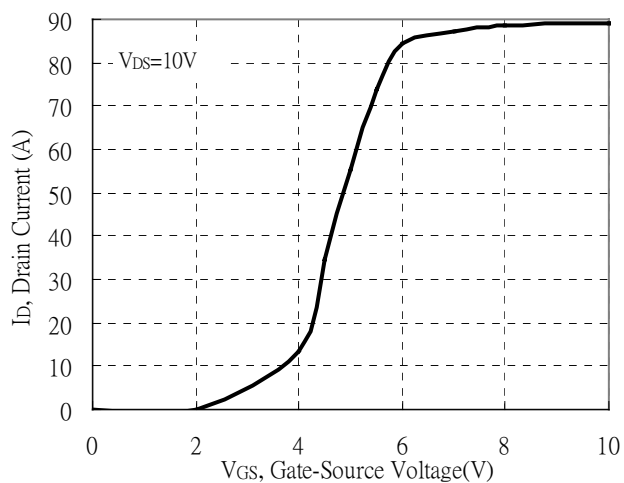


Maximum Drain Current vs Case Temperature

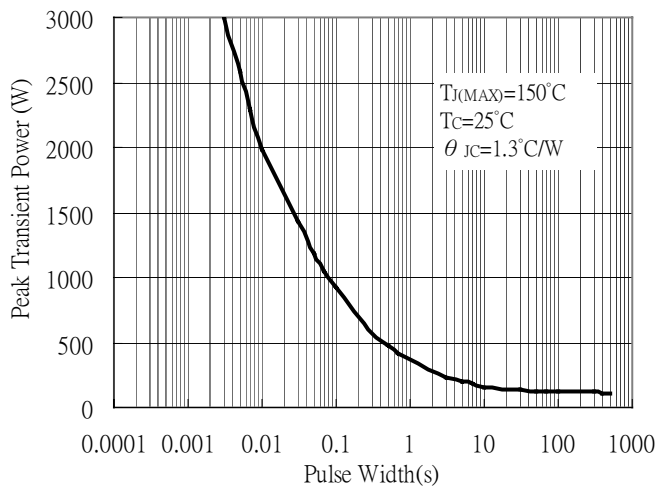


## Typical Characteristics(Cont.)

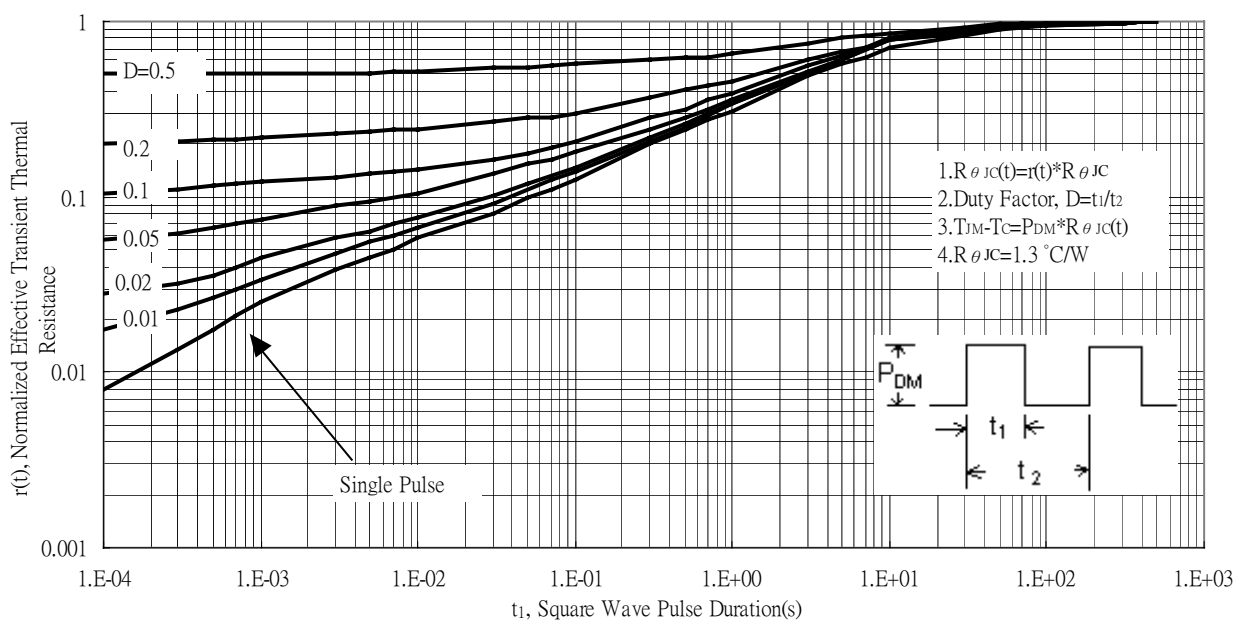
Typical Transfer Characteristics



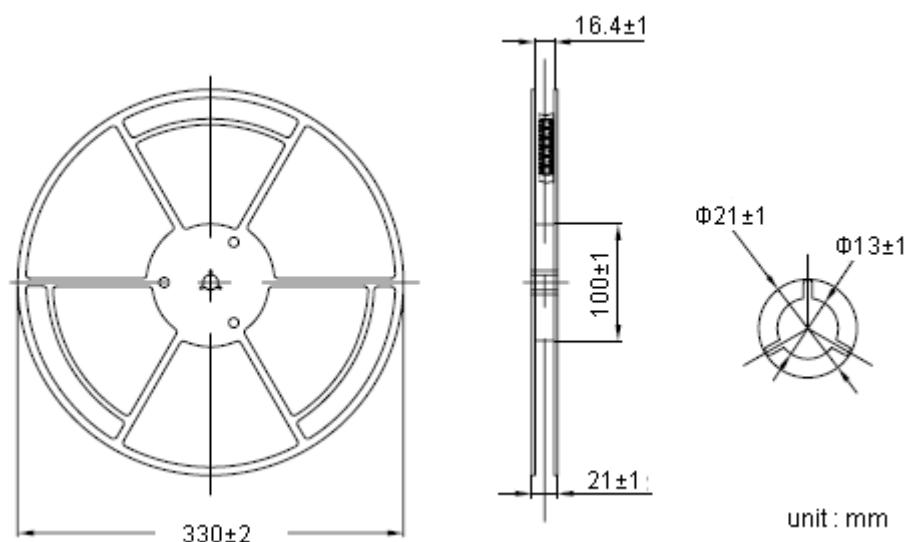
Single Pulse Maximum Power Dissipation



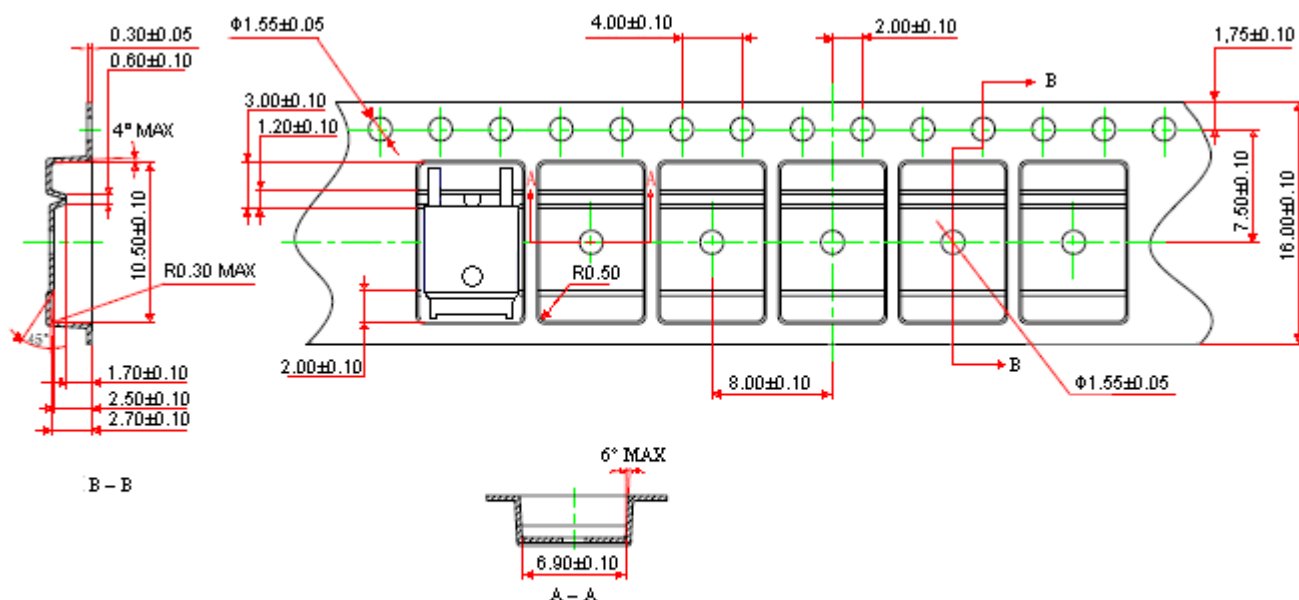
Transient Thermal Response Curves



## Reel Dimension



## Carrier Tape Dimension

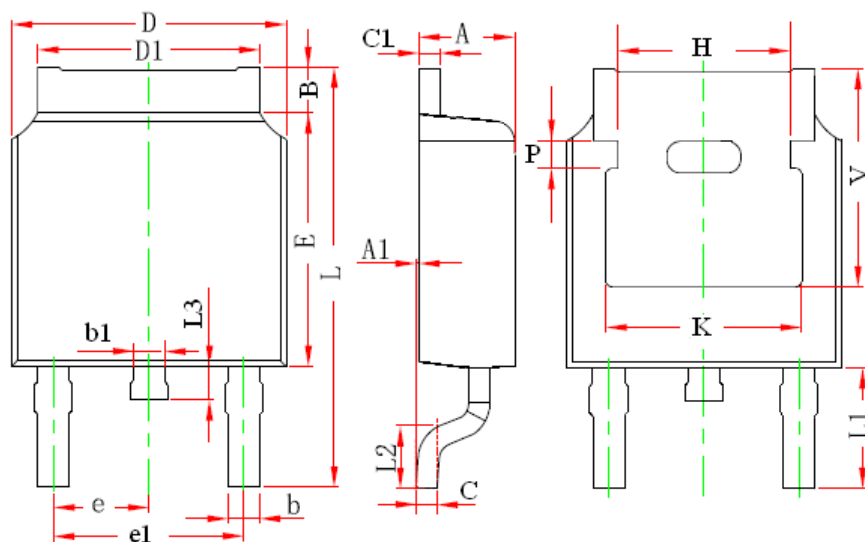


Notes:

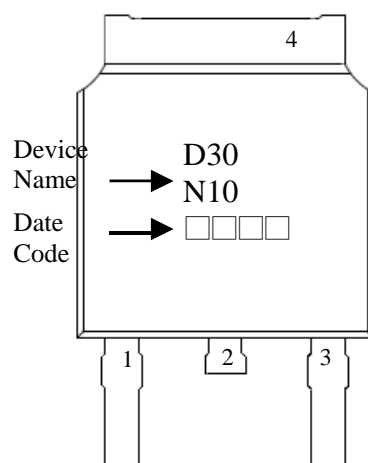
1. 10 sprocket hole pitch cumulative tolerance  $\pm 0.2$ .
2. Camber not to exceed 1mm in 100mm.
3. Material: conductive black polystyrene, antistatic coated :  $10^5 \Omega/\square \sim 10^{11} \Omega/\square$

unit : mm

## TO-252 Dimension



Marking:



3-Lead TO-252 Plastic Surface Mount Package

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

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.087	0.094	2.200	2.400	e	0.086	0.094	2.186	2.386
A1	0.000	0.005	0.000	0.127	e1	0.172	0.188	4.372	4.772
B	0.039	0.048	0.990	1.210	H	0.163	REF	4.140	REF
b	0.026	0.034	0.660	0.860	K	0.190	REF	4.830	REF
b1	0.026	0.034	0.660	0.860	L	0.386	0.409	9.800	10.400
C	0.018	0.023	0.460	0.580	L1	0.114	REF	2.900	REF
C1	0.018	0.023	0.460	0.580	L2	0.055	0.067	1.400	1.700
D	0.256	0.264	6.500	6.700	L3	0.024	0.039	0.600	1.000
D1	0.201	0.215	5.100	5.460	P	0.026	REF	0.650	REF
E	0.236	0.244	6.000	6.200	V	0.211	REF	5.350	REF