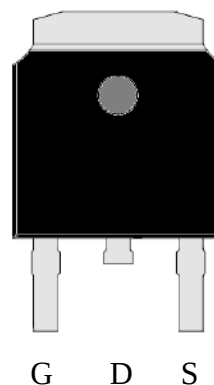


N-Channel Enhancement Mode Power MOSFET

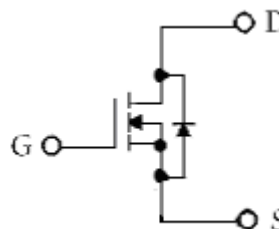
Features:

- Low Gate Charge
- Simple Drive Requirement
- Fast Switching Characteristic
- Pb-free lead plating and halogen-free package

TO-252(DPAK)



BV_{DSS}	200V
$I_D @ V_{GS}=10V, T_C=25^\circ C$	18A
$I_D @ V_{GS}=10V, T_A=25^\circ C$	1.9A
$R_{DS(on)(TYP)} @ V_{GS}=10V, I_D=9A$	156m Ω



G : Gate D : Drain S : Source

Ordering Information

Device	Package	Shipping
KJE130N20	TO-252 (Pb-free lead plating and halogen-free package)	2500 pcs / Tape & Reel

Absolute Maximum Ratings (T_C=25°C, unless otherwise noted)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V _{DS}	200	V
Gate-Source Voltage	V _{GS}	±20	
Continuous Drain Current @ T _C =25°C (Note 1)	I _D	18	A
Continuous Drain Current @ T _C =100°C (Note 1)		13	
Pulsed Drain Current (Note 3)	I _{DM}	30	
Continuous Drain Current @ T _A =25°C (Note 4)	I _{DSM}	1.9	
Continuous Drain Current @ T _A =70°C (Note 4)		1.5	
Avalanche Current (Note 3)	I _{AS}	3	
Avalanche Energy @ L=1mH, I _D =3A, V _{DD} =50V (Note 3)	E _{AS}	4.5	mJ
Power Dissipation	P _D	T _C =25°C (Note 1)	W
		T _C =100°C (Note 1)	
Power Dissipation	P _{DSM}	T _A =25°C (Note 2)	W
		T _A =70°C (Note 2)	
Operating Junction and Storage Temperature	T _J , T _{stg}	-55~+175	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{th,j-c}	1.2	°C/W
Thermal Resistance, Junction-to-ambient, max, t≤10s (Note 2)	R _{th,j-a}	62.5	°C/W
Thermal Resistance, Junction-to-ambient, max (Note 4)		90	°C/W

Note : 1. The power dissipation P_D is based on T_{J(MAX)}=175°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

2. The value of R_{θJA} is measured with the device mounted on 1 in² FR-4 board with 2 oz. copper, in a still air environment with T_A=25°C. The power dissipation P_{DSM} 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.

3. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=175°C. Ratings are based on low frequency and low duty cycles to keep initial T_J=25°C.

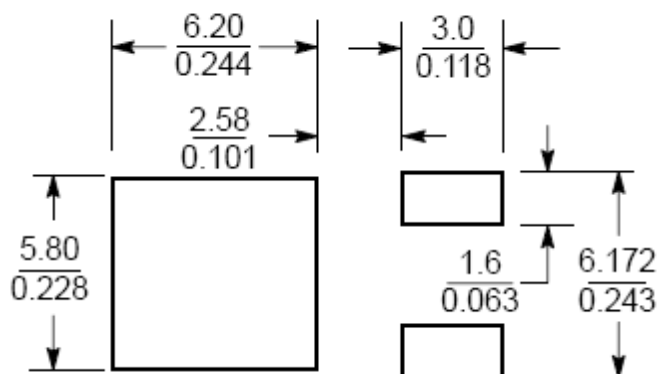
4. When mounted on the minimum pad size recommended (PCB mount), t≤10s.

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	200	-	-	V	V _{GS} =0V, I _D =250μA
ΔBV _{DSS} /ΔT _j	-	0.2	-	V/°C	Reference to 25°C, I _D =250μA
V _{GS(th)}	2.0	-	4.0	V	V _{DS} = V _{GS} , I _D =250μA
G _{FS}	-	12	-	S	V _{DS} =10V, I _D =9A
I _{GSS}	-	-	±100	nA	V _{GS} =±20V
I _{DSS}	-	-	1	μA	V _{DS} =180V, V _{GS} =0V
	-	-	10		V _{DS} =180V, V _{GS} =0V, T _j =125°C
*R _{DS(ON)}	-	156	195	mΩ	V _{GS} =10V, I _D =9A
Dynamic					
*Q _g	-	19	-	nC	V _{DS} =160V, I _D =18A, V _{GS} =10V
*Q _{gs}	-	5	-		
*Q _{gd}	-	7.2	-		
*t _{d(ON)}	-	12.6	-	ns	V _{DS} =100V, I _D =18A, V _{GS} =10V, R _G =6Ω
*t _r	-	35	-		
*t _{d(OFF)}	-	27.6	-		
*t _f	-	14.6	-		
C _{iss}	-	813	-	pF	V _{GS} =0V, V _{DS} =25V, f=1MHz
C _{oss}	-	85	-		
C _{rss}	-	36	-		
Source-Drain Diode					
*I _S	-	-	18	A	
*I _{SM}	-	-	30		
*V _{SD}	-	0.86	1.2	V	I _S =18A, V _{GS} =0V
*t _{rr}	-	80	-	ns	I _F =18A, V _{GS} =0, dI _F /dt=100A/μs
*Q _{rr}	-	245	-	nC	

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

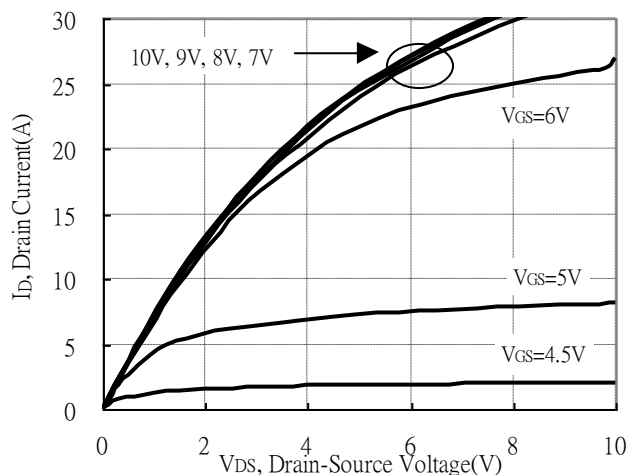
Recommended soldering footprint



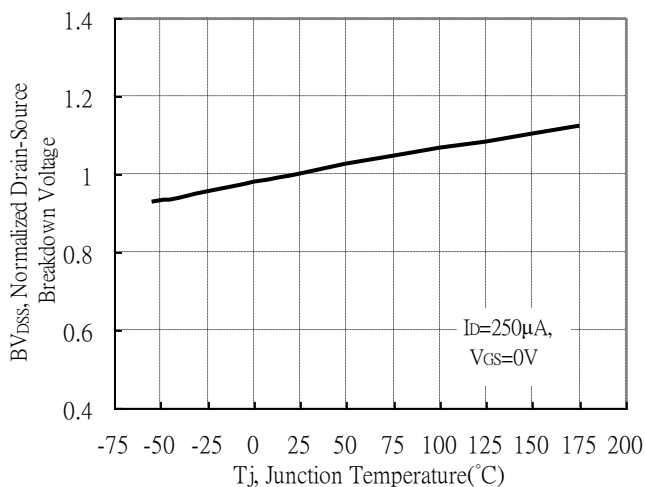
Unit ($\frac{\text{mm}}{\text{inch}}$)

Typical Characteristics

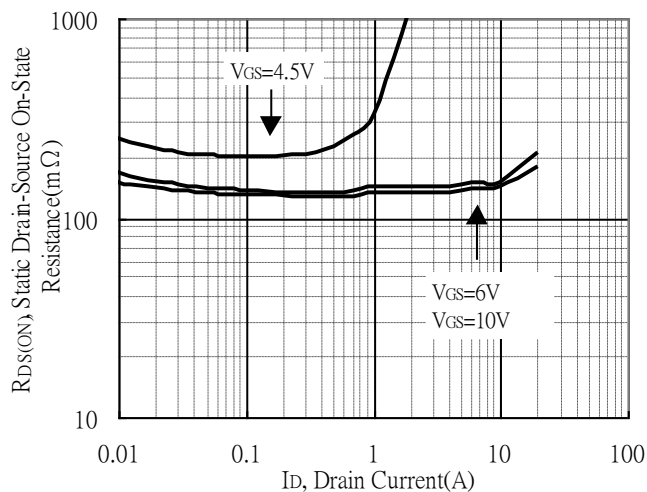
Typical Output Characteristics



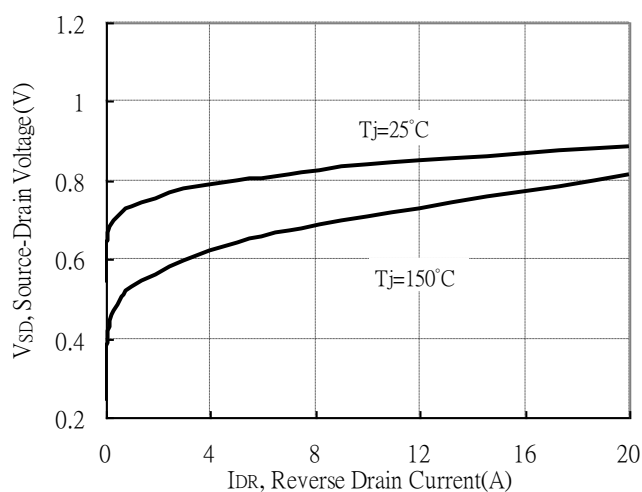
Breakdown Voltage vs Ambient Temperature



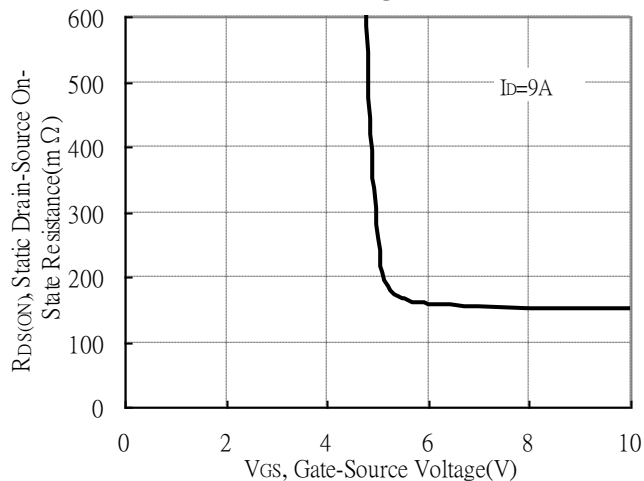
Static Drain-Source On-State resistance vs Drain Current



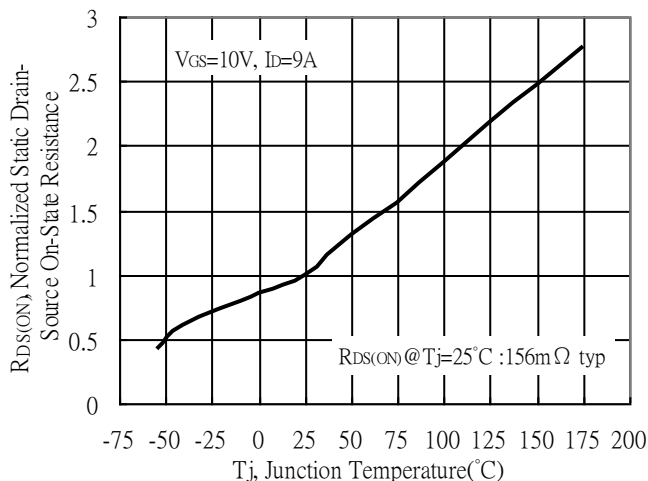
Reverse Drain Current vs Source-Drain Voltage



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

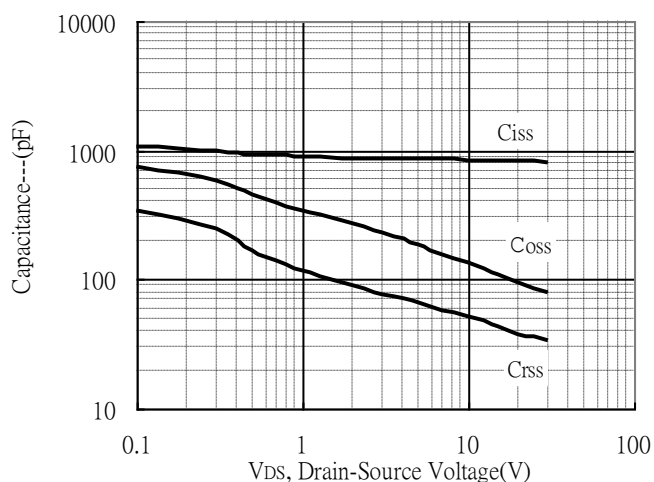


Drain-Source On-State Resistance vs Junction Temperature

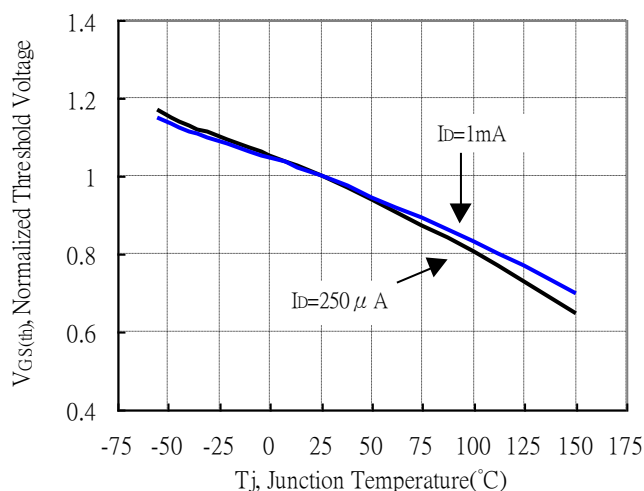


Typical Characteristics(Cont.)

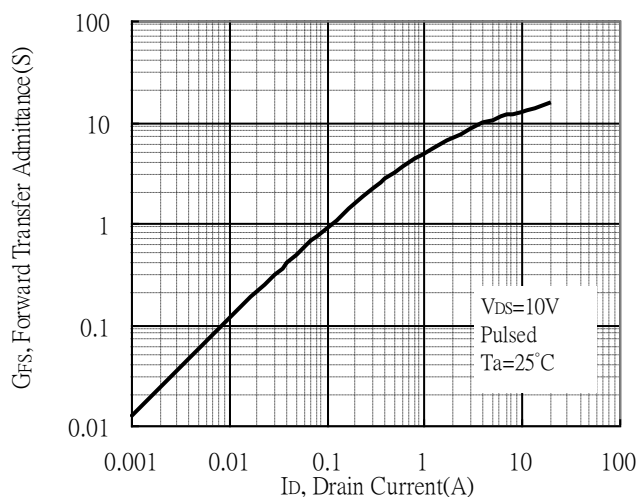
Capacitance vs Drain-to-Source Voltage



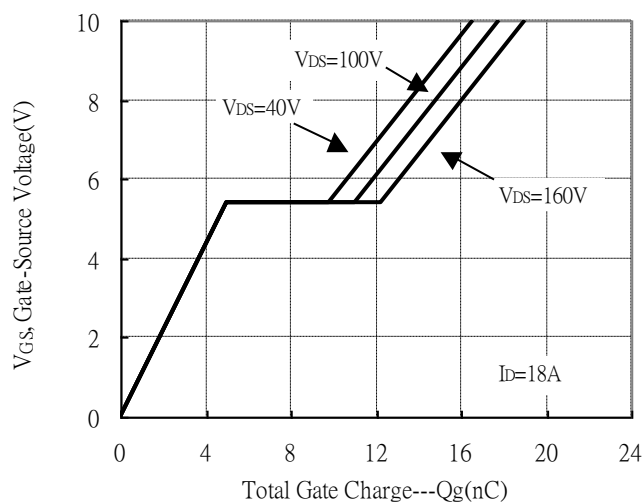
Normalized Threshold Voltage vs Junction Temperature



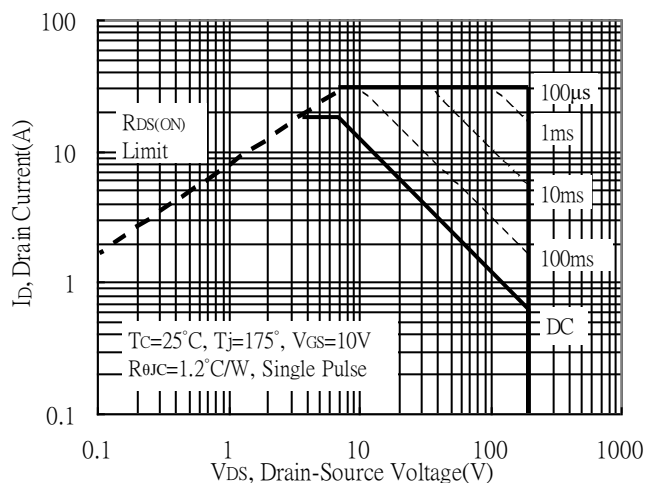
Forward Transfer Admittance vs Drain Current



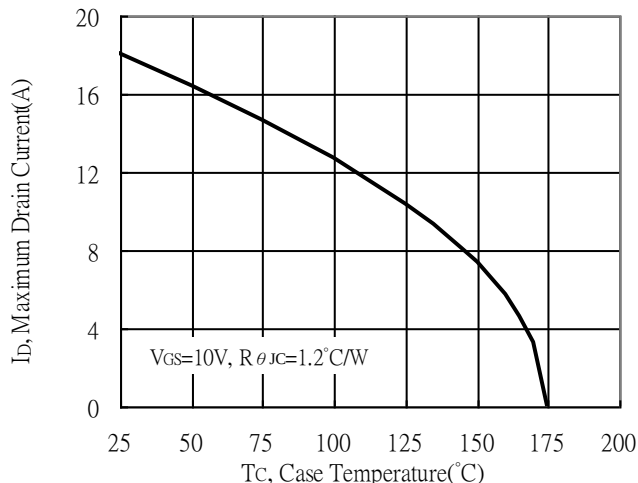
Gate Charge Characteristics



Maximum Safe Operating Area

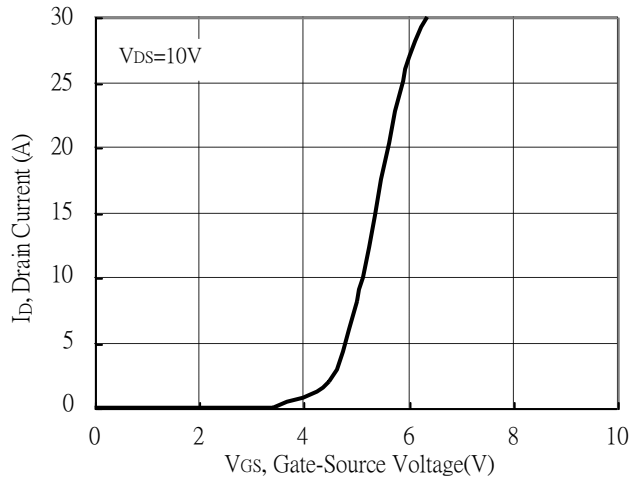


Maximum Drain Current vs Case Temperature

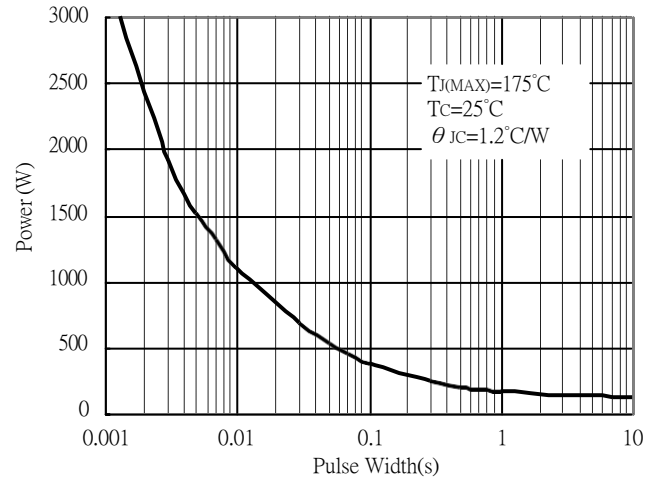


Typical Characteristics(Cont.)

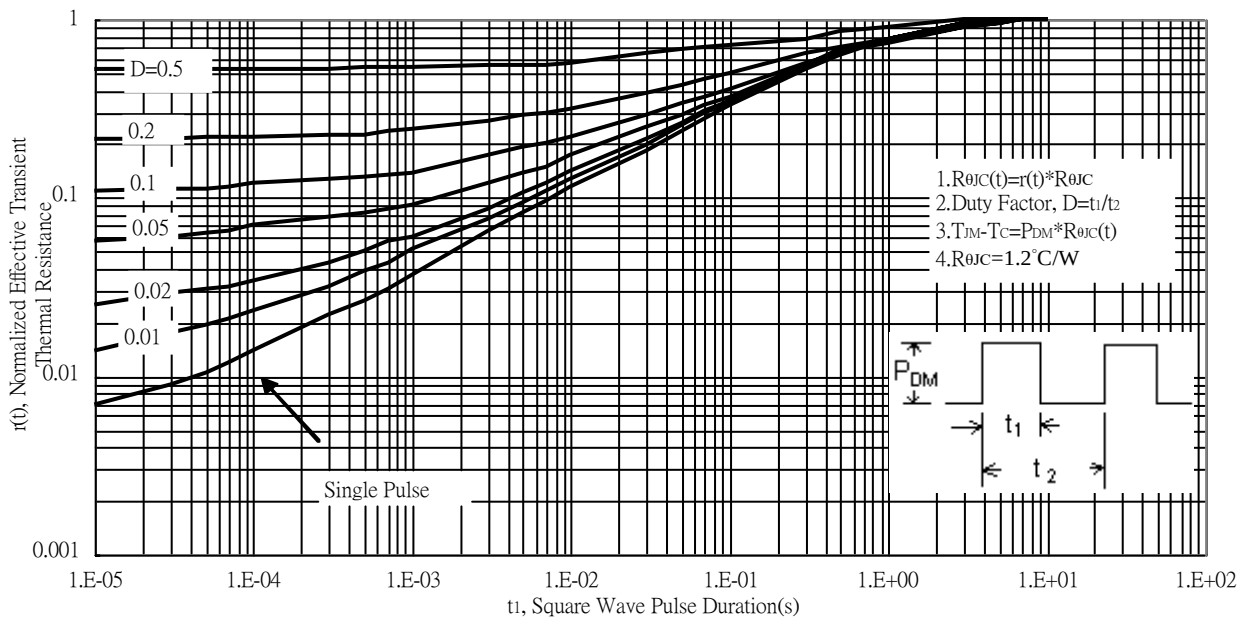
Typical Transfer Characteristics



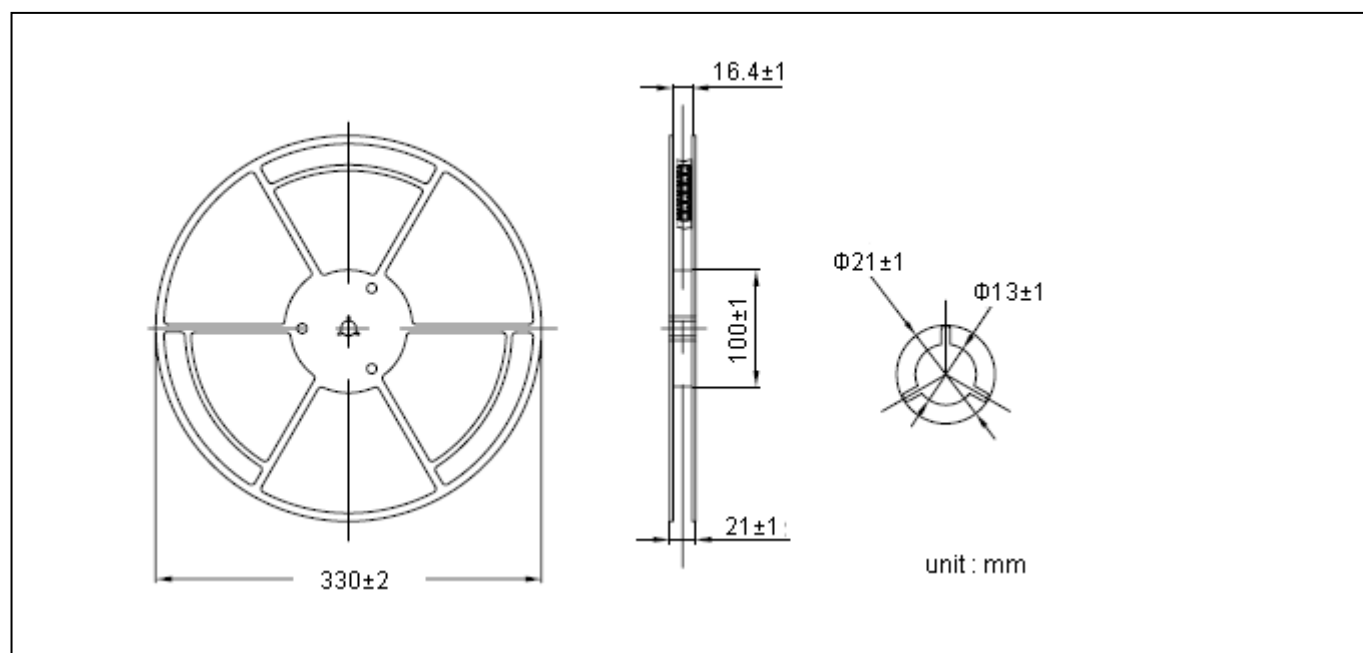
Single Pulse Maximum Power Dissipation



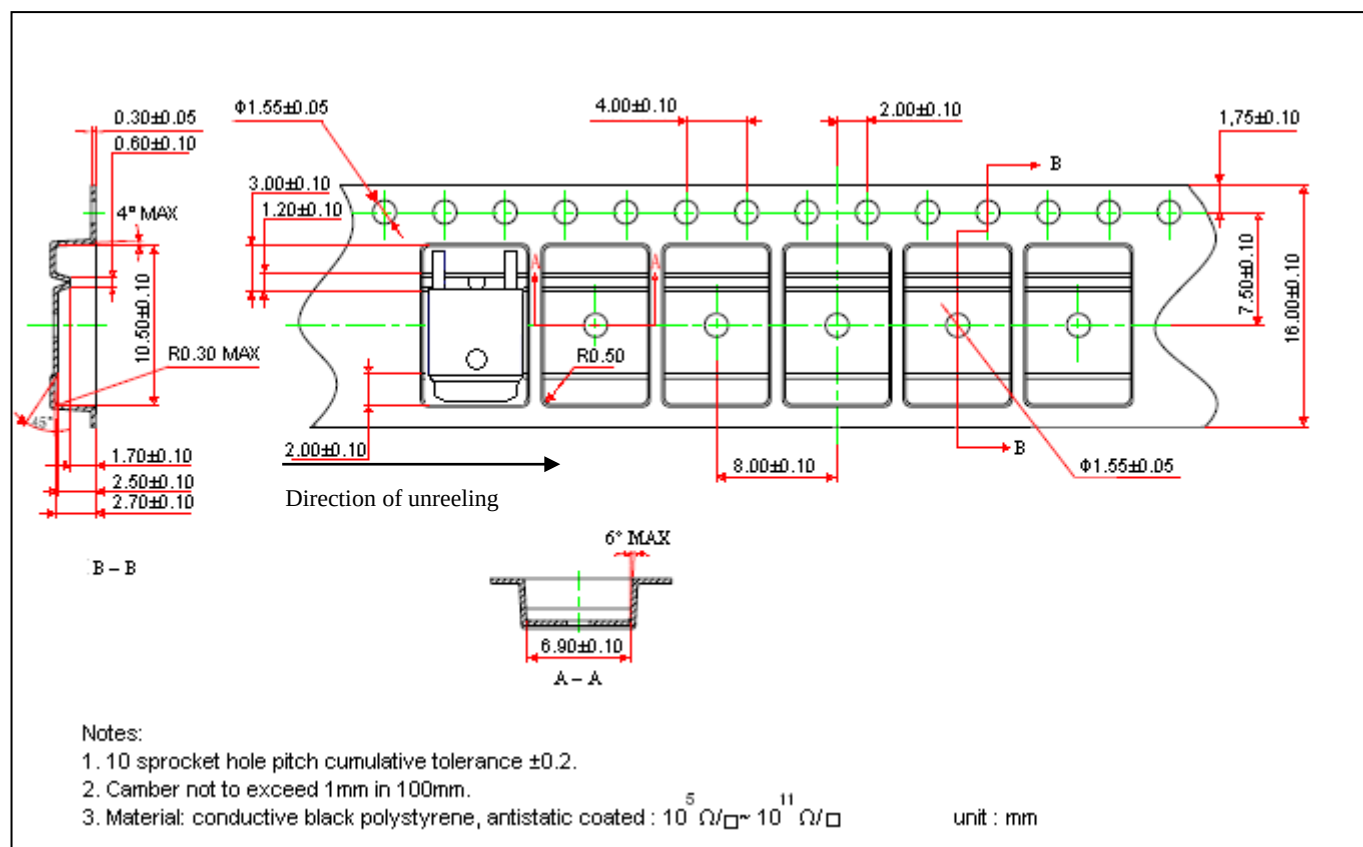
Transient Thermal Response Curves



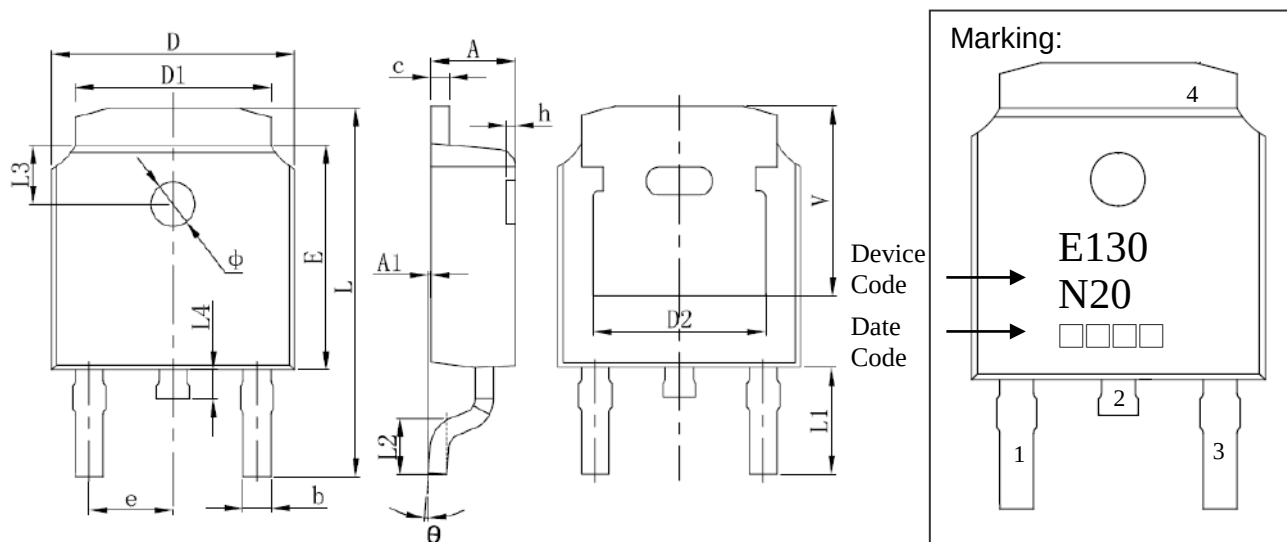
Reel Dimension



Carrier Tape Dimension



TO-252 Dimension



3-Lead TO-252 Plastic Surface Mount Package

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

Date Code :

First Code : Last digit of Christian Year

Second 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

Last Two Codes : Production Serial Code, 01~99

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	0.063	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