

N -Channel Enhancement Mode Power MOSFET

Features:

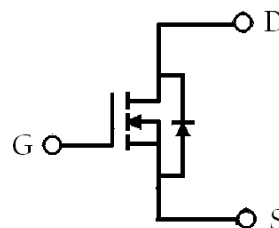
- Low Gate Charge
- Simple Drive Requirement
- Pb-free lead plating and halogen-free package

TO-252(DPAK)



G D S

BV_{DSS}	100V
I_D@ V_{GS}=10V, T_C=25°C	29A
R_{DS(ON)}@ V_{GS}=10V, I_D=15A	25.3mΩ(typ)



G : Gate D : Drain S :
Source

Ordering Information

Device	Package	Shipping
KJE030N10Q	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}	100	V
Gate-Source Voltage	V _{GS}	±20	
Continuous Drain Current @ T _C =25°C, V _{GS} =10V	I _D	29	A
Continuous Drain Current @ T _C =100°C, V _{GS} =10V		18	
Continuous Drain Current @ T _A =25°C, V _{GS} =10V *4		6.5	
Continuous Drain Current @ T _A =70°C, V _{GS} =10V *4		5.2	
Pulsed Drain Current *1	I _{DM}	116	
Avalanche Current	I _{AS}	29	mJ
Avalanche Energy @ L=0.1mH, I _{AS} =29A, V _{DD} =25V, V _{GS} =10V *3	E _{AS}	42	
Repetitive Avalanche Energy @ L=0.05mH *1, *2	E _{AR}	5	
Total Power Dissipation @T _C =25°C	P _D	50	W
Total Power Dissipation @T _C =100°C		20	
Total Power Dissipation @T _A =25°C *4		2.5	
Total Power Dissipation @T _A =70°C *4		1.6	
Operating Junction and Storage Temperature Range	T _j , T _{stg}	-55~+150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{θJC}	2.5	°C/W
Thermal Resistance, Junction-to-ambient, max *4	R _{θJA}	50	
Thermal Resistance, Junction-to-ambient, max		110	

Note : *1. Pulse width limited by maximum junction temperature

*2. Duty cycle ≤ 1%

*3. 100% tested by conditions of L=0.1mH, I_{AS}=24A, V_{GS}=10V, V_{DD}=25V

*4. Surface mounted on 1 in² copper pad of FR-4 board

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	100	-	-	V	V _{GS} =0V, I _D =250μA
ΔBV _{DSS} /ΔT _j	-	0.07	-	V/°C	Reference to 25°C, I _D =250μA
V _{GS(th)}	2	-	4	V	V _{DS} =V _{GS} , I _D =250μA
G _{FS} *1	-	8.3	-	S	V _{DS} =10V, I _D =10A
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0V
I _{DSS}	-	-	1	μA	V _{DS} =80V, V _{GS} =0V
	-	-	25		V _{DS} =80V, V _{GS} =0V, T _j =125°C
R _{DS(ON)} *1	-	25.3	33	mΩ	V _{GS} =10V, I _D =15A
Dynamic					
Q _g *1, 2	-	18.6	-	nC	I _D =15A, V _{DS} =50V, V _{GS} =10V
Q _{gs} *1, 2	-	3.1	-		
Q _{gd} *1, 2	-	10.2	-		

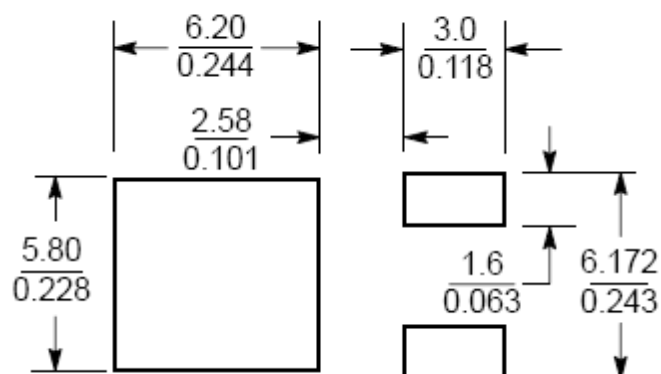
$t_{d(ON)}$ *1, 2	-	12	-	ns	$V_{DS}=50V, I_D=15A, V_{GS}=10V, R_G=3\Omega$
t_r *1, 2	-	26.6	-		
$t_{d(OFF)}$ *1, 2	-	22.4	-		
t_f *1, 2	-	14	-		
C_{iss}	-	558	-	pF	$V_{GS}=0V, V_{DS}=25V, f=1MHz$
C_{oss}	-	124	-		
C_{rss}	-	111	-		
R_g	-	1.4	-	Ω	$f=1MHz$
Source-Drain Diode					
I_S *1	-	-	29	A	
I_{SM} *3	-	-	116		
V_{SD} *1	-	0.9	1.2	V	$I_S=15A, V_{GS}=0V$
t_{rr}	-	28.6	-	ns	$I_F=15A, dI_F/dt=100A/\mu s$
Q_{rr}	-	33.5	-	nC	

Note : *1.Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

*2.Independent of operating temperature

*3.Pulse width limited by maximum junction temperature.

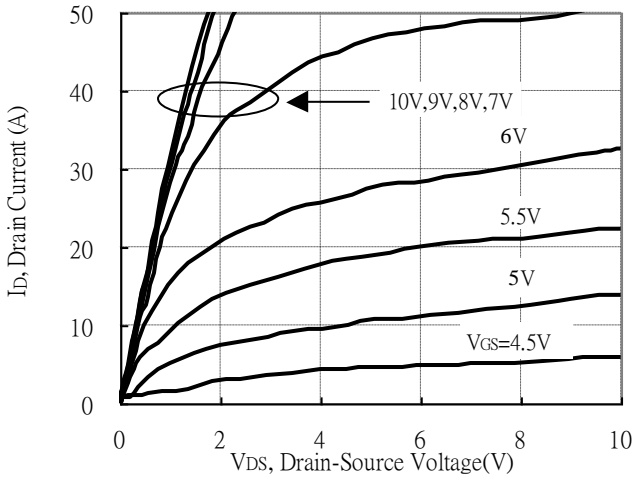
Recommended soldering footprint



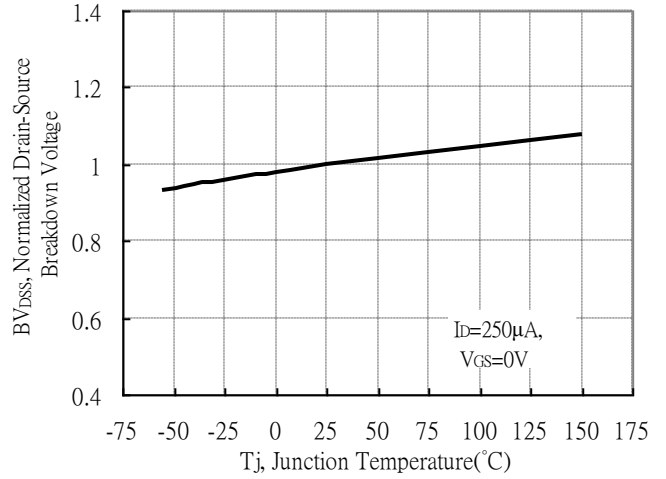
Unit ($\frac{mm}{inch}$)

Typical Characteristics

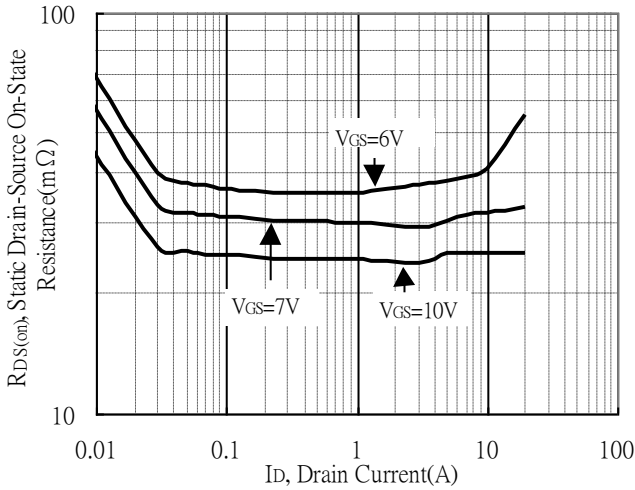
Typical Output Characteristics



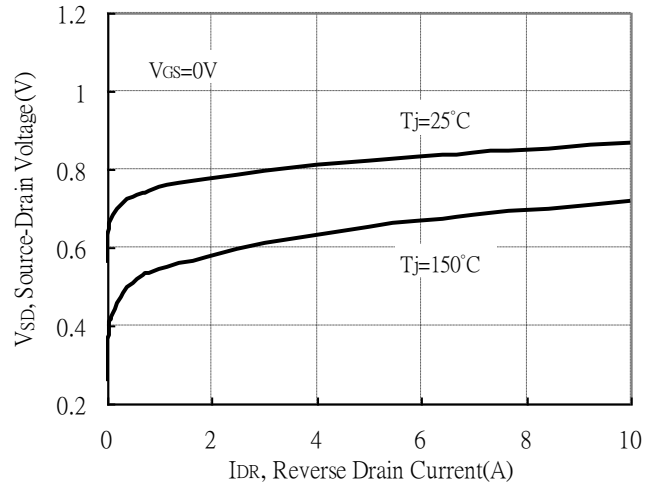
Brekdown Voltage vs Ambient Temperature



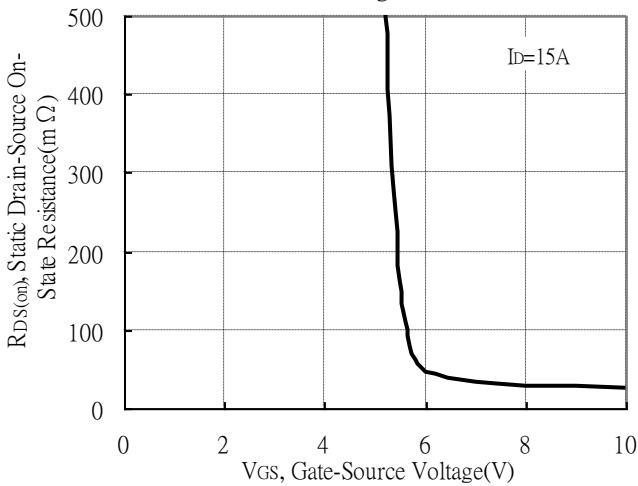
Static Drain-Source On-State resistance vs Drain Current



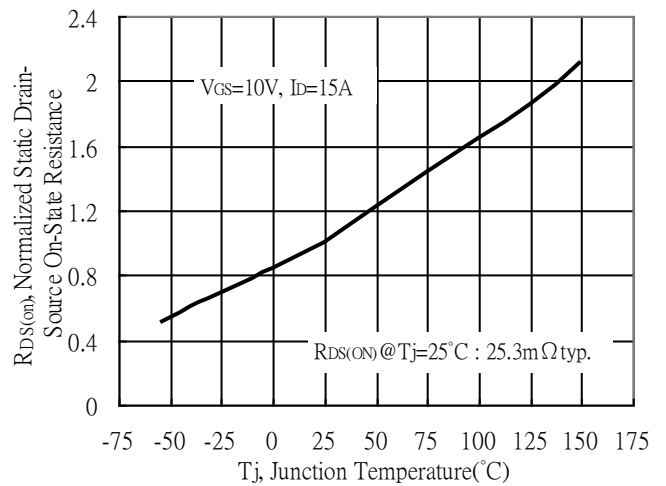
Reverse Drain Current vs Source-Drain Voltage



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

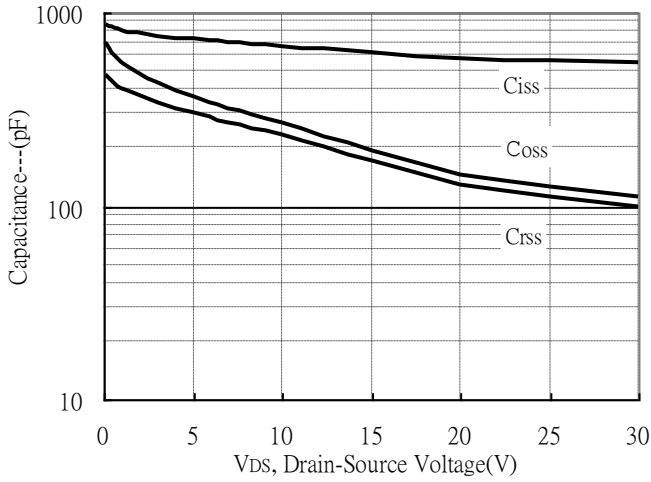


Drain-Source On-State Resistance vs Junction Temperature

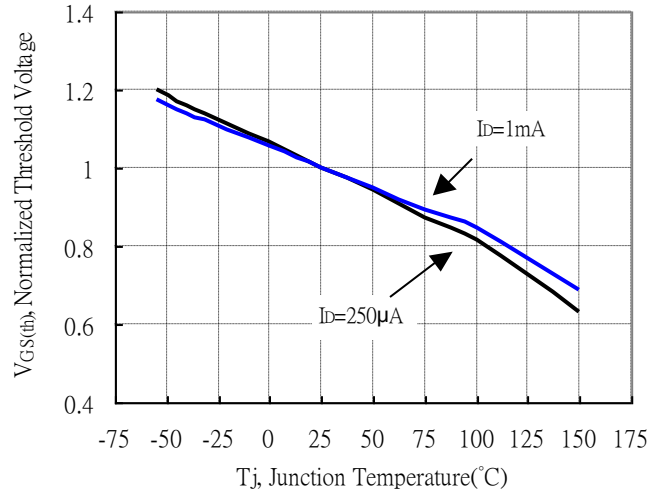


Typical Characteristics(Cont.)

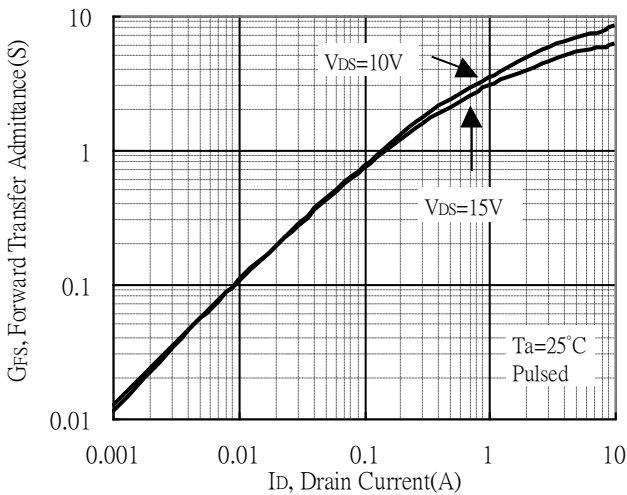
Capacitance vs Drain-to-Source Voltage



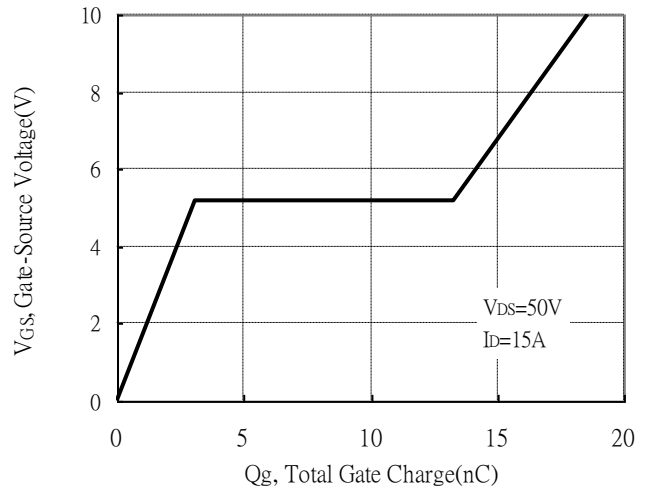
Threshold Voltage vs Junction Temperature



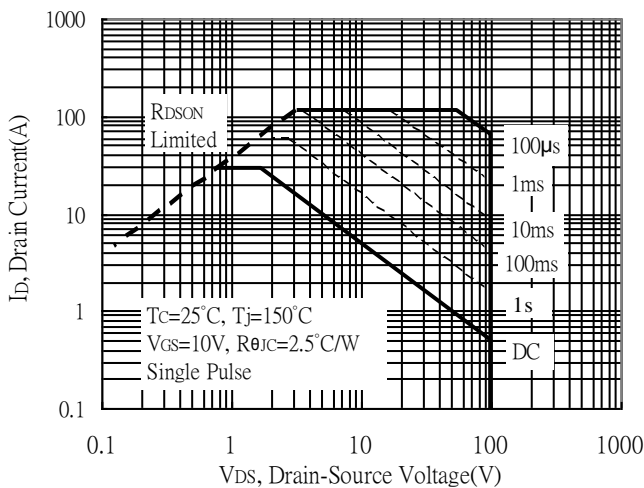
Forward Transfer Admittance vs Drain Current



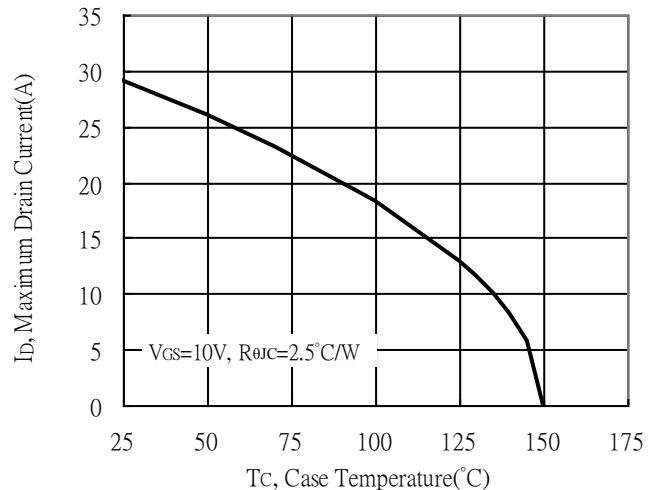
Gate Charge Characteristics



Maximum Safe Operating Area

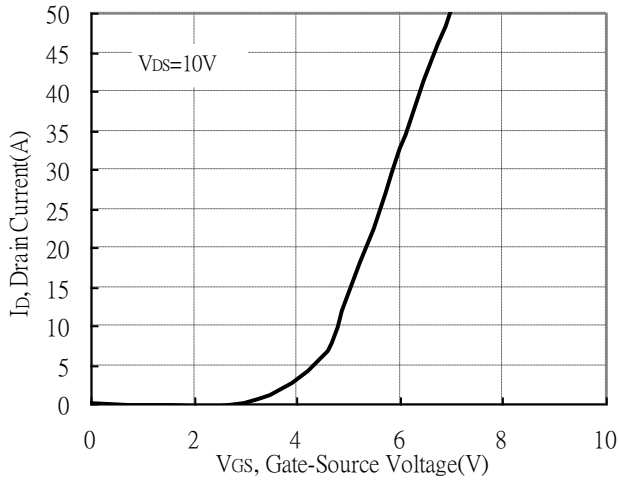


Maximum Drain Current vs Case Temperature

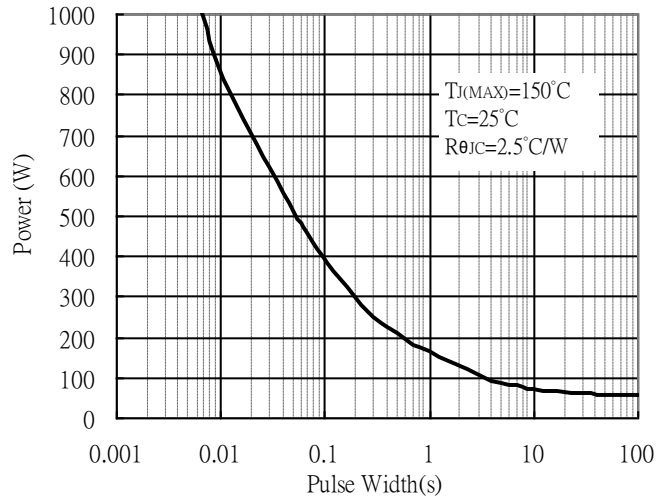


Typical Characteristics(Cont.)

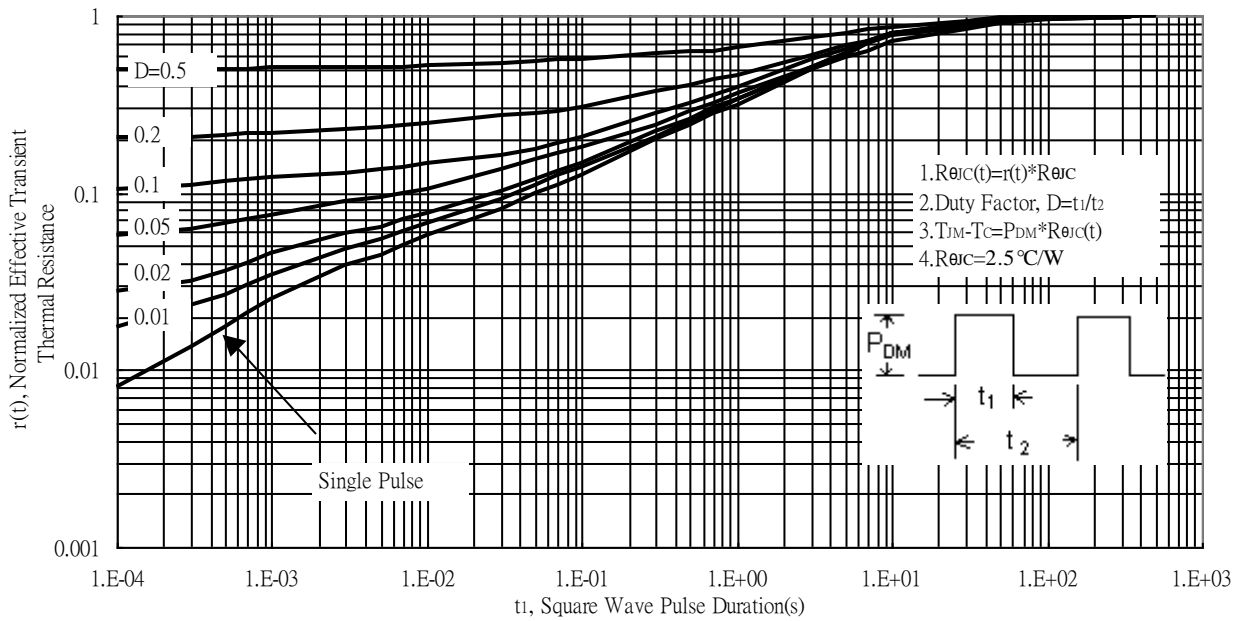
Typical Transfer Characteristics



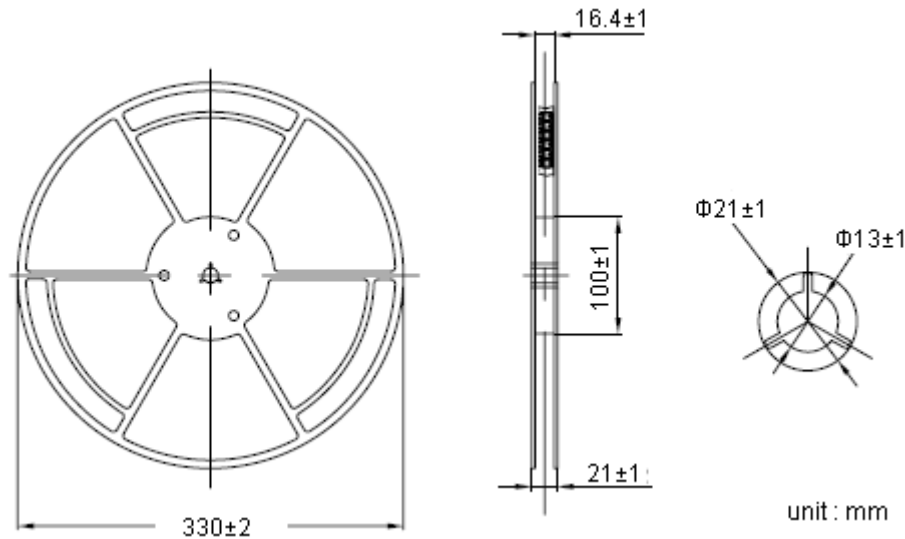
Single Pulse Power Rating, Junction to Case



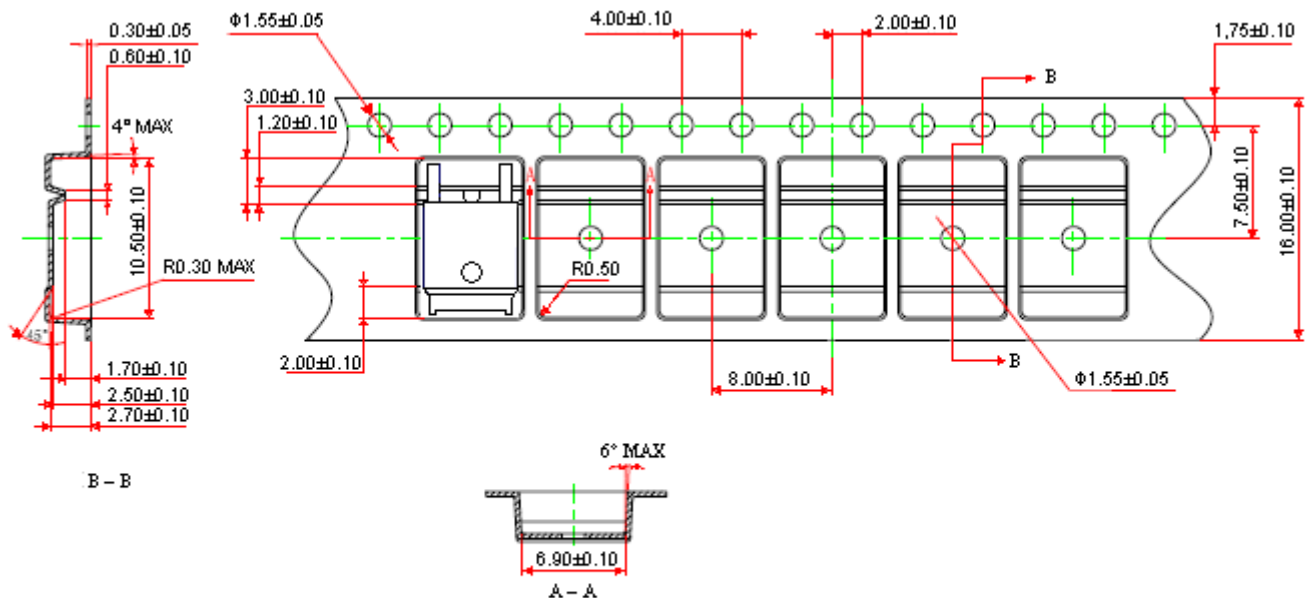
Transient Thermal Response Curves



Reel Dimension



Carrier Tape Dimension

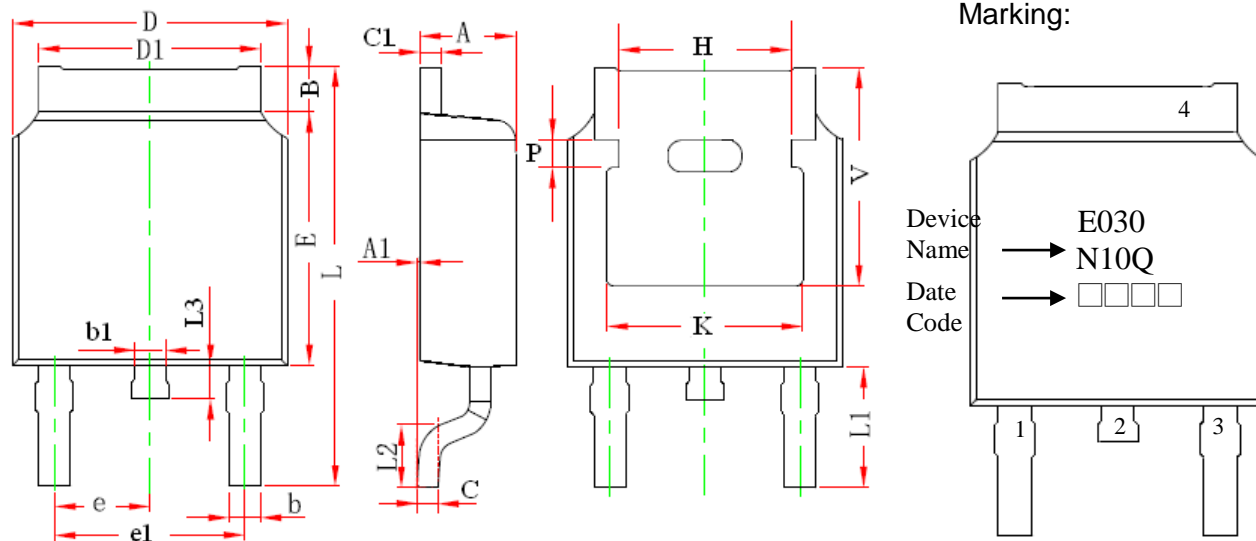


Notes:

1. 10 sprocket hole pitch cumulative tolerance ± 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



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