

N-Channel Enhancement Mode Power MOSFET

Features:

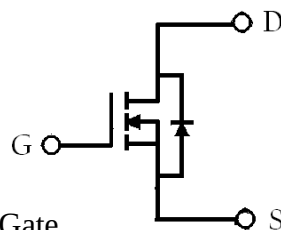
- Simple Drive Requirement
- Repetitive Avalanche Rated
- Fast Switching Characteristic
- RoHS compliant package

TO-252(DPAK)



G D S

BV_{DSS}	100V
I_D@ T_C=25°C, V_{GS}=10V	33A
R_{DS(ON)}@ V_{GS}=10V, I_D=25A	36mΩ(typ)
R_{DS(ON)}@ V_{GS}=5V, I_D=25A	38mΩ(typ)
R_{DS(ON)}@ V_{GS}=4.5V, I_D=25A	39mΩ(typ)



G : Gate
D : Drain
S : Source

Ordering Information

Device	Package	Shipping
KJN9240	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	33	A
Continuous Drain Current @ T _c =100°C, V _{GS} =10V		23	
Pulsed Drain Current (Note 1)	I _{DM}	90	
Avalanche Current	I _{AS}	32	
Avalanche Energy @ L=0.3mH, I _D =32A, R _G =25Ω	E _{AS}	154	mJ
Repetitive Avalanche Energy @ L=0.05mH (Note 2)	E _{AR}	9	
Total Power Dissipation @ T _c =25°C	P _D	115	W
Total Power Dissipation @ T _c =100°C		57.5	
Operating Junction and Storage Temperature Range	T _j , T _{stg}	-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 _{th,j-c}	1.3	°C/W
Thermal Resistance, Junction-to-ambient, max	R _{th,j-a}	50 (Note)	
		110	

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

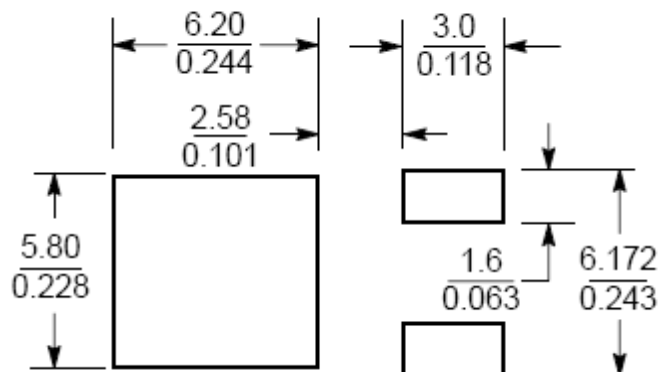
Characteristics (T_c=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	100	-	-	V	V _{GS} =0V, I _D =250μA
V _{GS(th)}	1	1.4	2		V _{DS} = V _{GS} , I _D =250μA
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0V
I _{DSS}	-	-	1	μA	V _{DS} =100V, V _{GS} =0V
	-	-	25		V _{DS} =80V, V _{GS} =0V, T _j =125°C
*R _{DS(ON)}	-	36	45	mΩ	V _{GS} =10V, I _D =25A
	-	38	45		V _{GS} =5V, I _D =25A
	-	39	50		V _{GS} =4.5V, I _D =25A
*G _{FS}	-	24	-	S	V _{DS} =10V, I _D =20A
Dynamic					
*Q _g	-	21	-	nC	V _{DS} =80V, I _D =25A, V _{GS} =10V
*Q _{gs}	-	3	-		
*Q _{gd}	-	10	-		

*Qg	-	22.7	-	nC	V _{DS} =30V, I _D =1A, V _{GS} =10V
*Qgs	-	2.9	-		
*Qgd	-	2.4	-		
*t _{d(ON)}	-	11	-	ns	V _{DS} =50V, I _D =1A, V _{GS} =10V, R _{GS} =6Ω
*t _r	-	34	-		
*t _{d(OFF)}	-	62	-		
*t _f	-	32	-		
C _{iss}	-	1180	-	pF	V _{GS} =0V, V _{DS} =25V, f=1MHz
C _{oss}	-	114	-		
C _{rss}	-	60	-		
R _g	-	3.9	-	Ω	f=1MHz
Source-Drain Diode					
*I _S	-	-	33	A	
*I _{SM}	-	-	90		
*V _{SD}	-	0.88	1.2	V	I _F =25A, V _{GS} =0V
*t _{rr}	-	28	-	ns	I _F =25A, V _{GS} =0V, dI _F /dt=100A/μs
*Q _{rr}	-	40	-	nC	

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

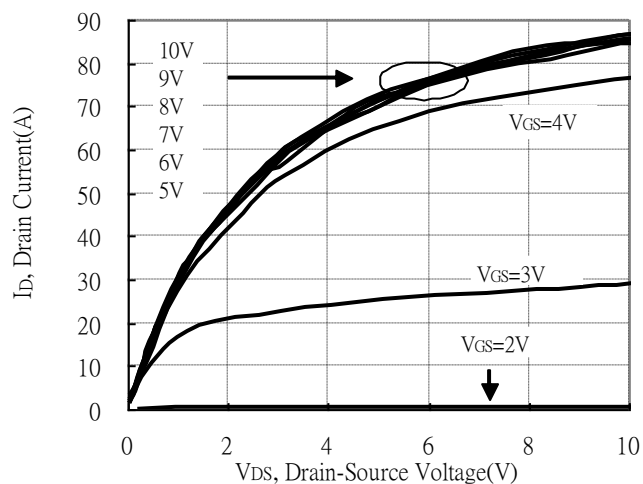
Recommended soldering footprint



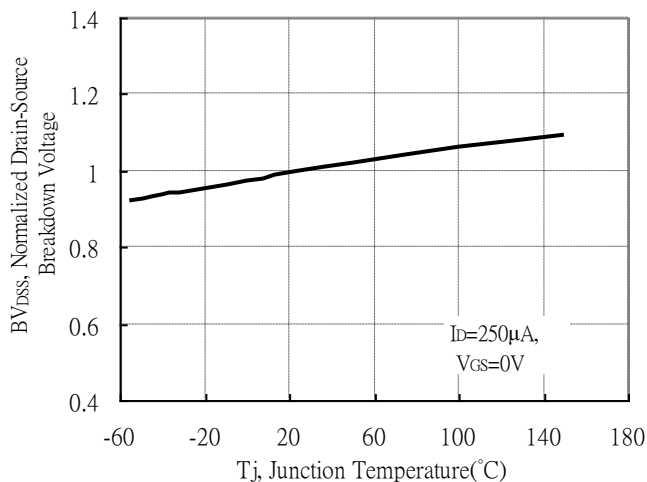
Unit ($\frac{\text{mm}}{\text{inch}}$)

Typical Characteristics

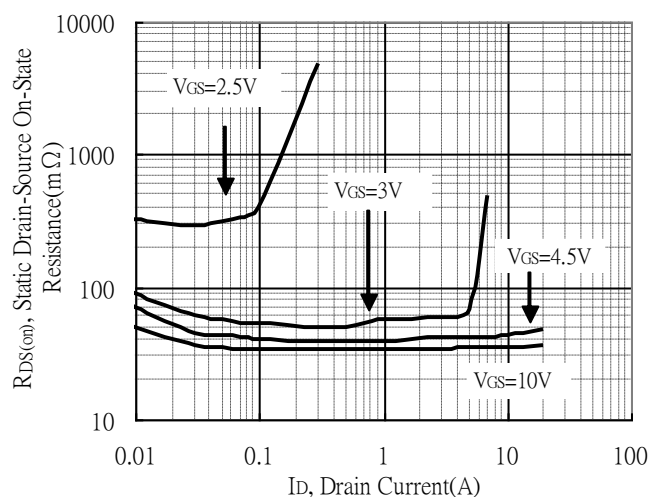
Typical Output Characteristics



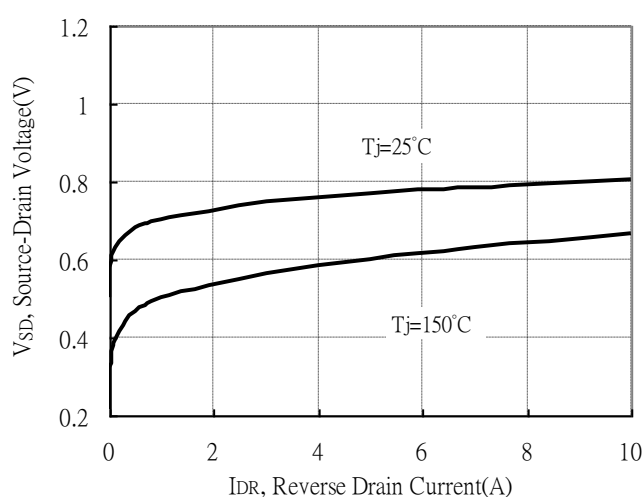
Brekdown Voltage vs Ambient Temperature



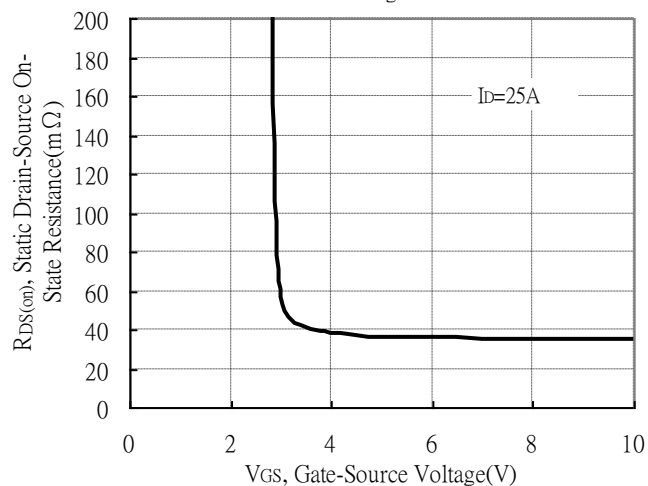
Static Drain-Source On-State resistance vs Drain Current



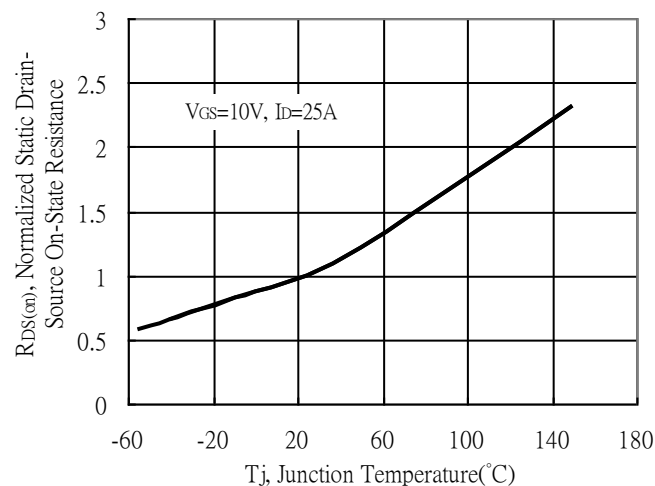
Reverse Drain Current vs Source-Drain Voltage



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

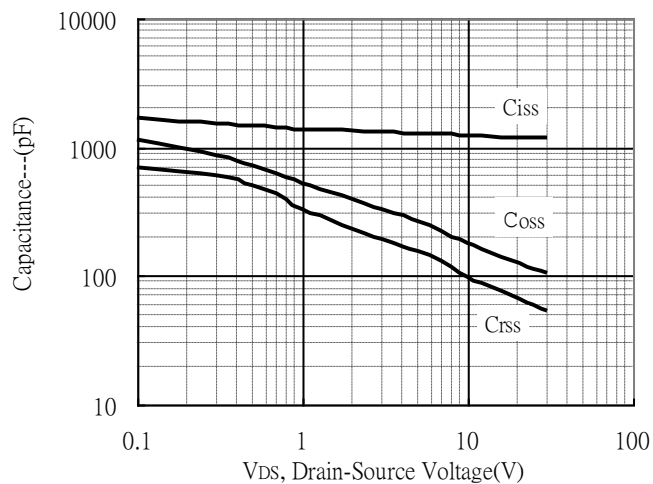


Drain-Source On-State Resistance vs Junction Temperature

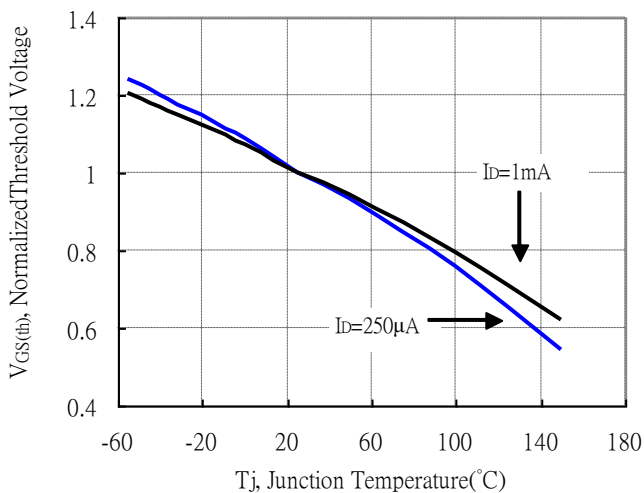


Typical Characteristics(Cont.)

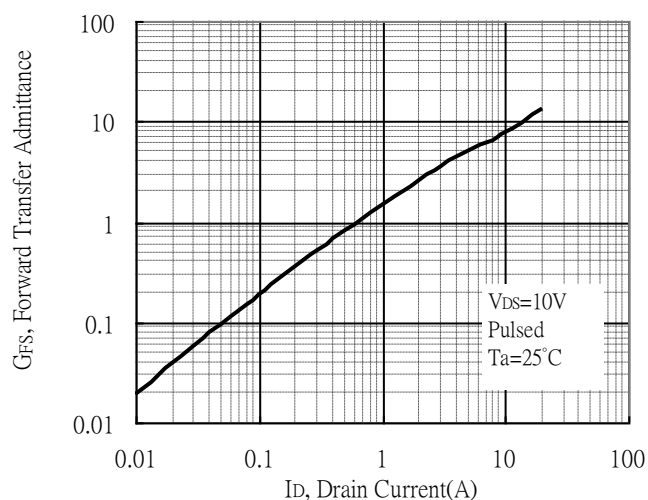
Capacitance vs Drain-to-Source Voltage



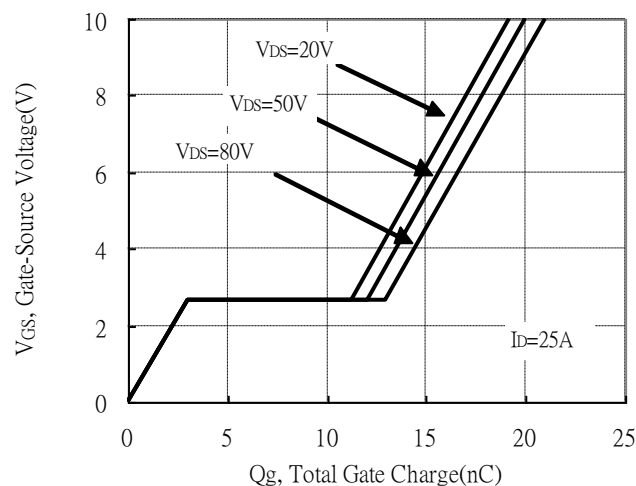
Threshold Voltage vs Junction Temperature



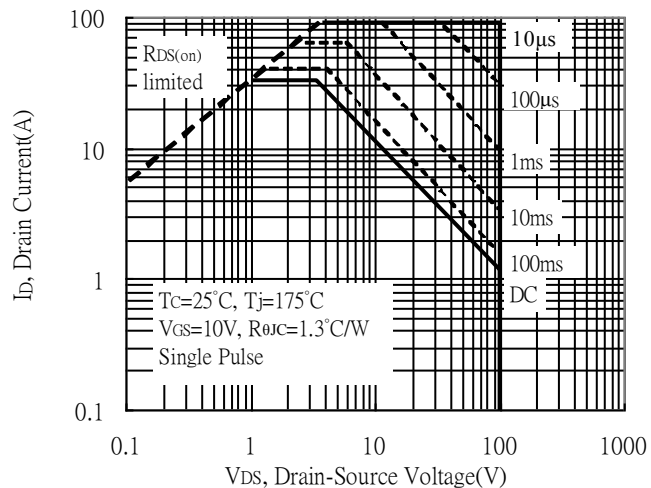
Forward Transfer Admittance vs Drain Current



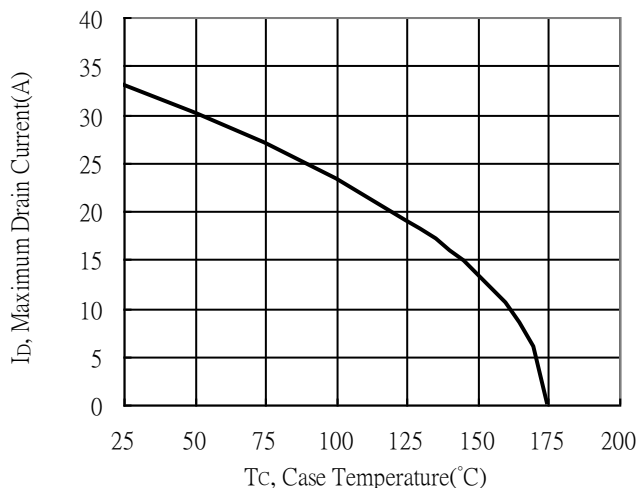
Gate Charge Characteristics



Maximum Safe Operating Area

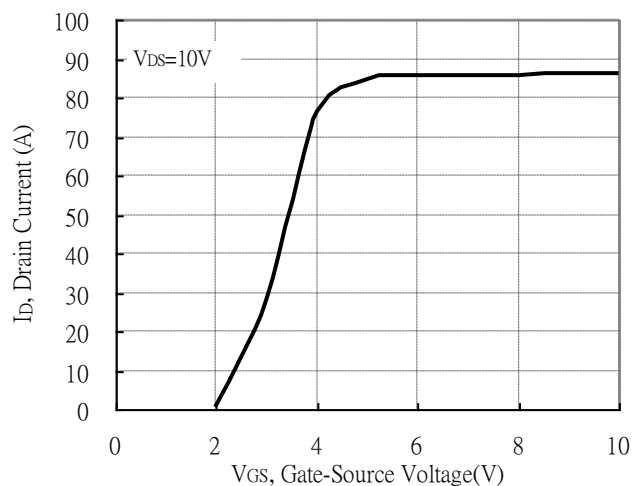


Maximum Drain Current vs Case Temperature

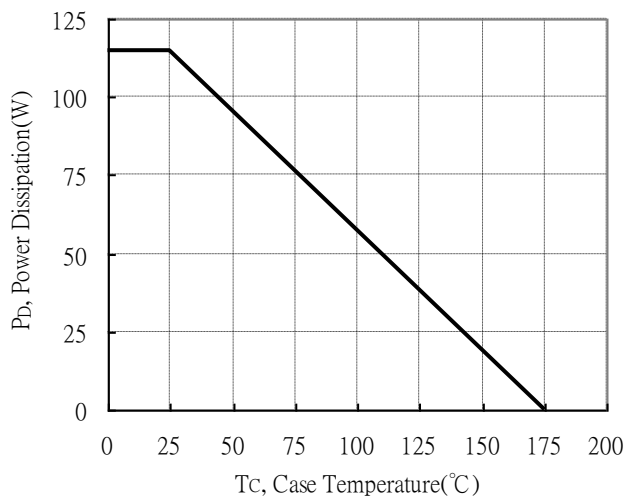


Typical Characteristics(Cont.)

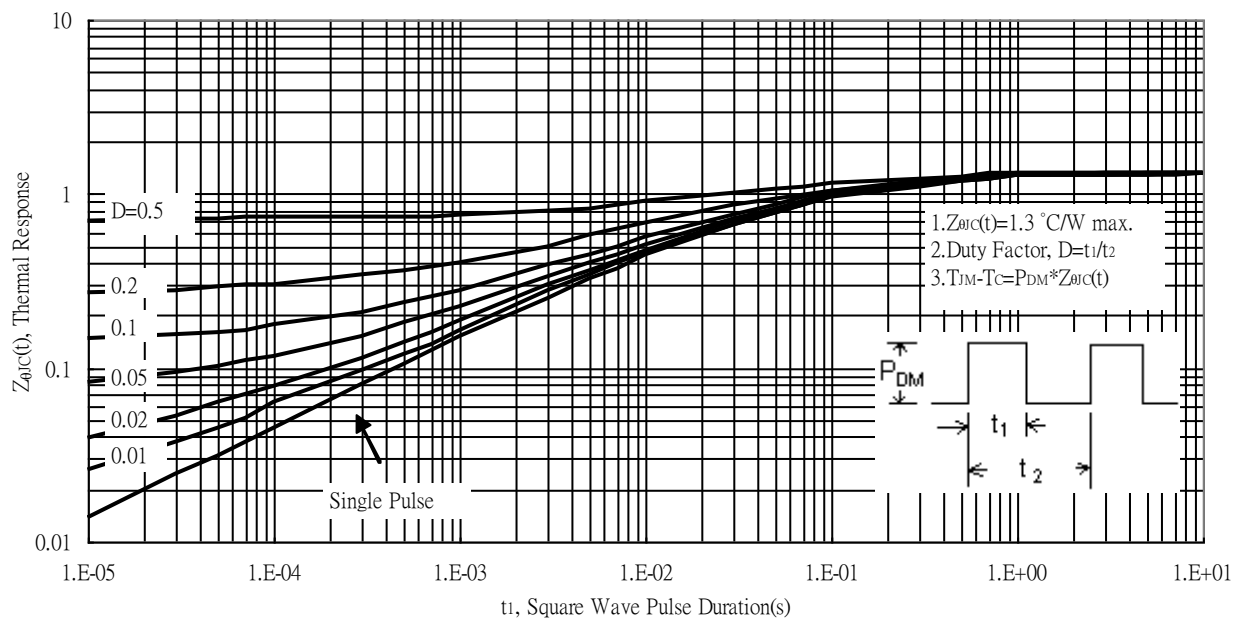
Typical Transfer Characteristics



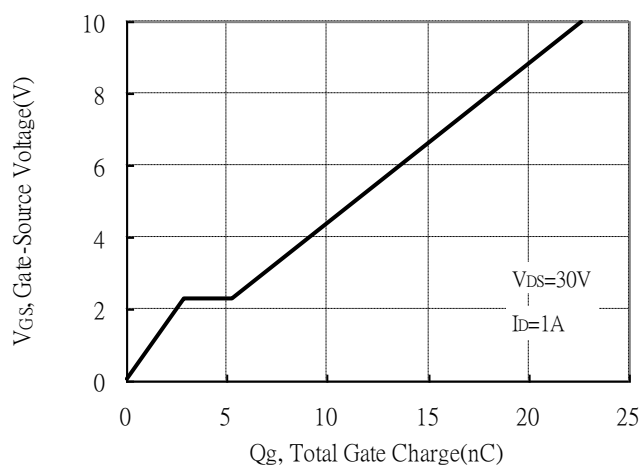
Power Derating Curve



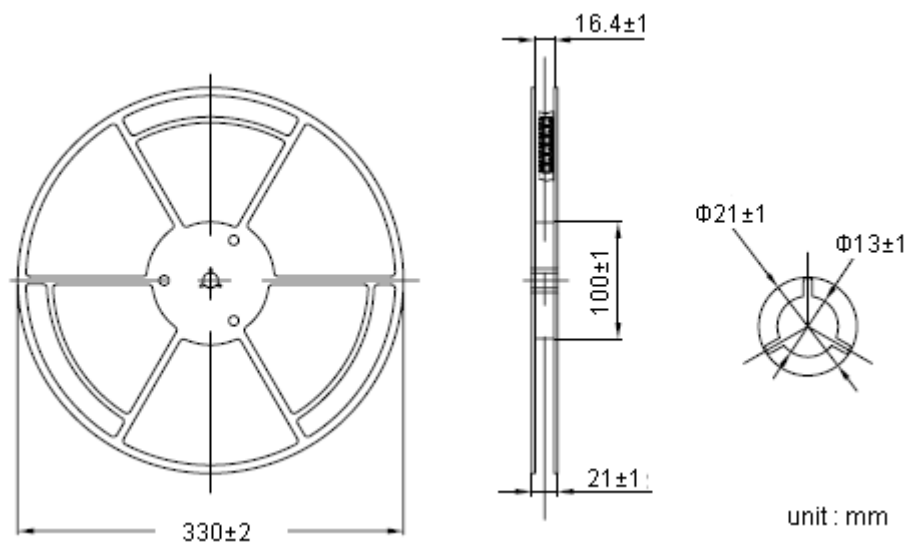
Transient Thermal Response Curves



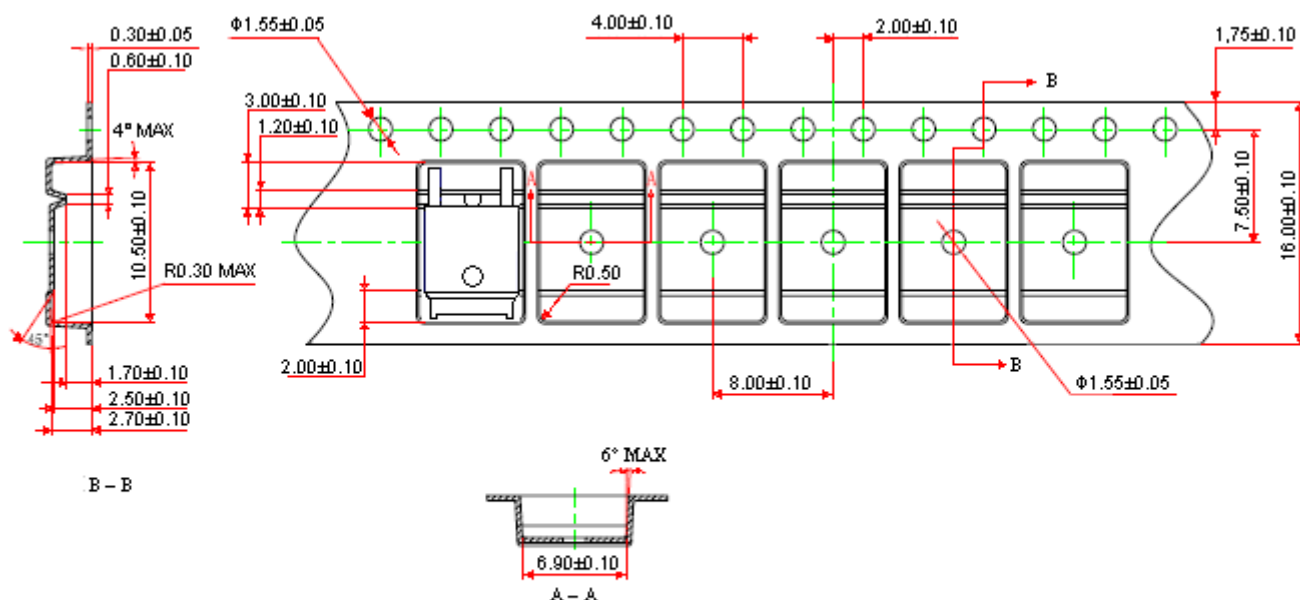
Gate Charge Characteristics



Reel Dimension



Carrier Tape Dimension

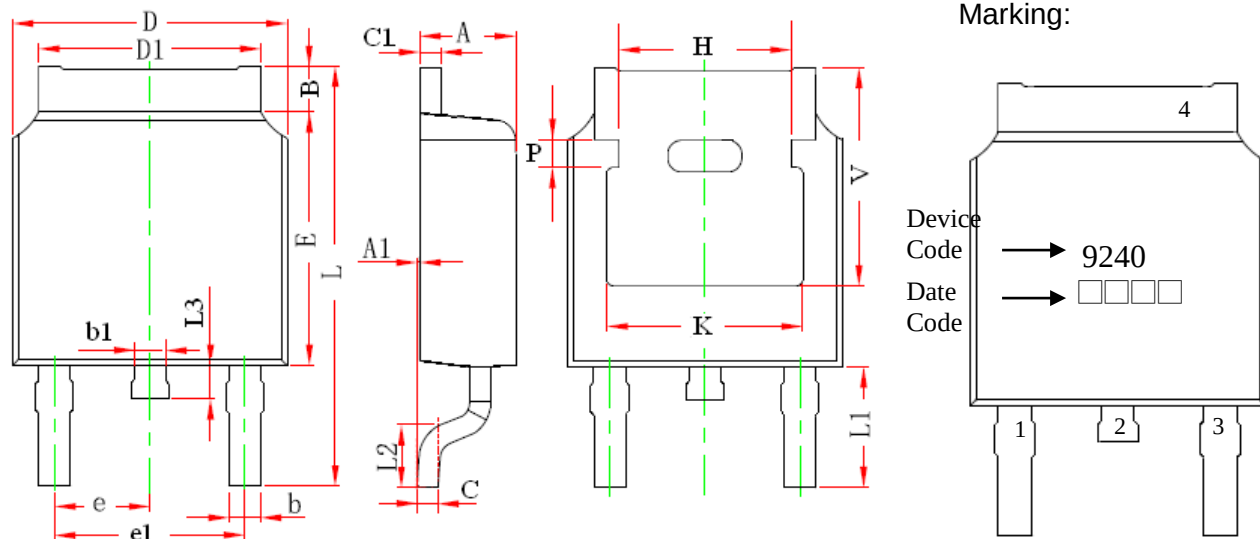


Notes:

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