

N-Channel Logic Level Enhancement Mode Power MOSFET

Features:

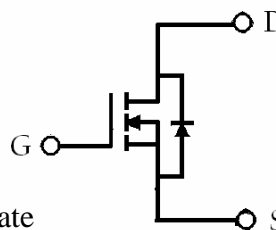
- Single Drive Requirement
- Low On-resistance
- Fast Switching Characteristic
- Dynamic dv/dt rating
- Repetitive Avalanche Rated
- Pb-free Lead Plating and Halogen-free package

TO-252(DPAK)



G D S

BV _{DSS}	30V
I _D	40A
R _{DS(on)} @V _{GS} =10V, I _D =15A	8.5mΩ (typ.)
R _{DS(on)} @V _{GS} =4.5V, I _D =10A	13.5mΩ (typ.)



G : Gate
D : Drain
S : Source

Ordering Information

Device	Package	Shipping
KJB12N03	TO-252 (Pb-free lead plating & halogen-free package)	2500 pcs / Tape & Reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit	
Drain-Source Voltage	V _{DS}	30	V	
Gate-Source Voltage	V _{GS}	±20		
Continuous Drain Current @ T _C =25°C	I _D	40	A	
Continuous Drain Current @ T _C =100°C		25		
Pulsed Drain Current	I _{DM}	120 *1		
Avalanche Current	I _{AS}	30		
Avalanche Energy @ L=0.1mH, I _D =30A, R _G =25 Ω	E _{AS}	45	mJ	
Repetitive Avalanche Energy @ L=0.05mH	E _{AR}	4.5 *2		
Total Power Dissipation	P _D	T _C =25°C	35	W
		T _C =100°C	14	
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 _{th,j-c}	3.5	°C/W
Thermal Resistance, Junction-to-ambient, max	R _{th,j-a}	50 *3	°C/W
Thermal Resistance, Junction-to-ambient, max	R _{th,j-a}	110	°C/W

- Note : 1. Pulse width limited by maximum junction temperature
 2. Duty cycle ≤ 1%
 3. When mounted on the minimum pad size recommended (PCB mount).

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

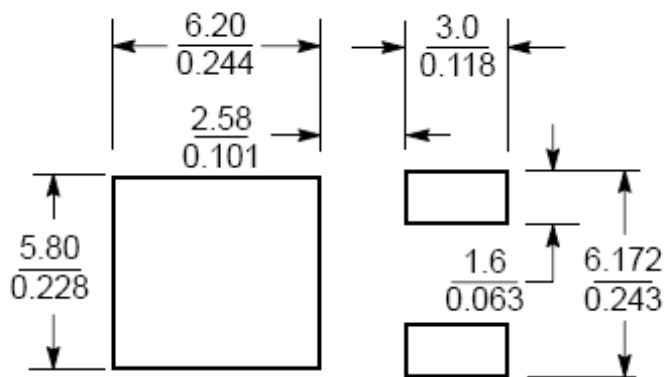
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	30	-	-	V	V _{GS} =0, I _D =250μA
V _{GS(th)}	1	1.7	3	V	V _{DS} = V _{GS} , I _D =250μA
G _{FS} *1	-	14	-	S	V _{DS} = 5V, I _D =15A
I _{GSS}	-	-	±100	nA	V _{GS} =±20
I _{DSS}	-	-	1	μA	V _{DS} = 24V, V _{GS} = 0
	-	-	25		V _{DS} = 24V, V _{GS} = 0, T _J =125°C
R _{DS(ON)} *1	-	8.5	11.5	mΩ	V _{GS} = 10V, I _D =15A
	-	13.5	20	mΩ	V _{GS} = 4.5V, I _D =10A
Dynamic					
C _{iss}	-	1195	-	pF	V _{GS} =0V, V _{DS} =15V, f=1MHz
C _{oss}	-	123	-		
C _{rss}	-	101	-		

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Qg (VGS=10V) *1, 2	-	12	-	nC	VDS=15V, VGS=10V, ID=15A
Qg (VGS=4.5V) *1, 2	-	6.2	-		
Qgs *1, 2	-	1.2	-		
Qgd *1, 2	-	3.7	-		
td(ON) *1, 2	-	8	-	ns	VDS=15V, ID=1A, VGS=10V, RGS=2.7Ω
tr *1, 2	-	6	-		
td(OFF) *1, 2	-	24	-		
tf *1, 2	-	3	-		
Rg	-	2	-	Ω	VGS=15mV, VDS=0V, f=1MHz
Source-Drain Diode					
IS *1	-	-	25	A	
ISM *3	-	-	100		
VSD *1	-	-	1.3	V	IF=IS, VGS=0V
trr	-	18	-	ns	IF=IS, dIF/dt=100A/μs
Qrr	-	10	-	nC	

Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%
 *2.Independent of operating temperature
 *3.Pulse width limited by maximum junction temperature.

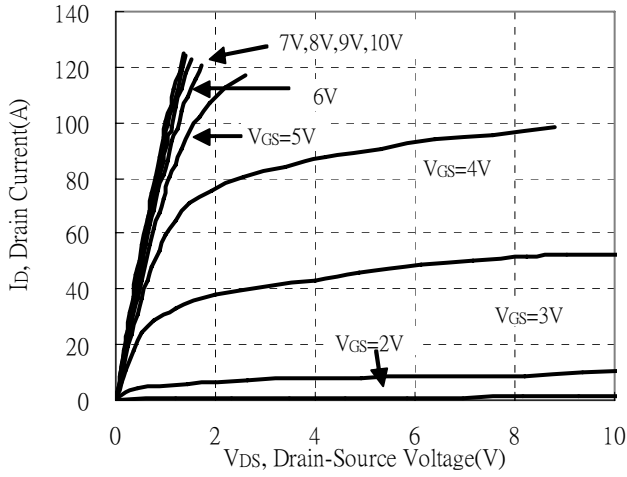
Recommended soldering footprint



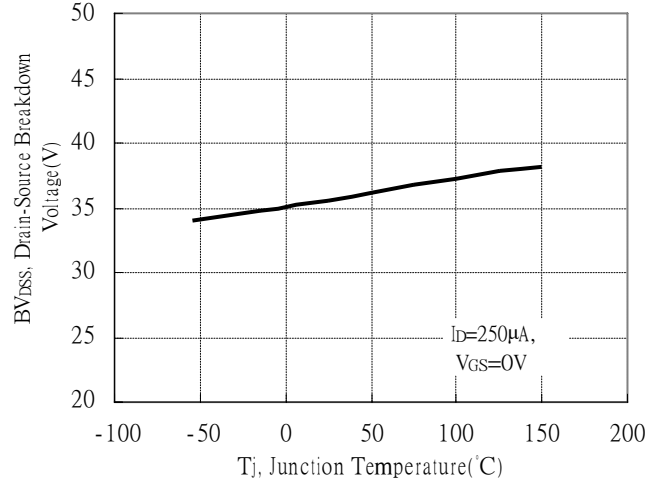
Unit ($\frac{\text{mm}}{\text{inch}}$)

Typical Characteristics

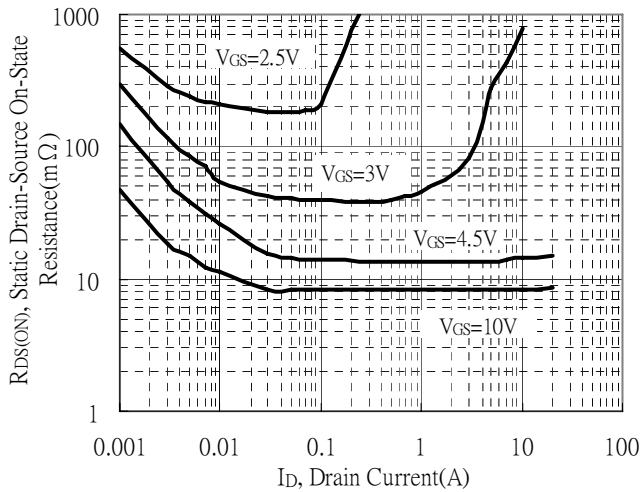
Typical Output Characteristics



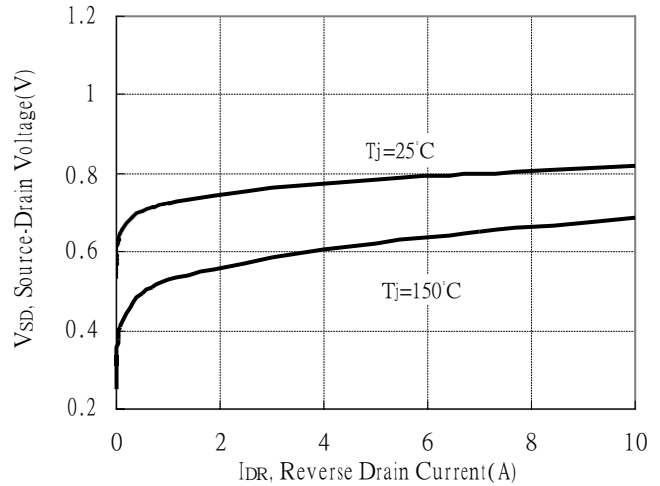
Brekdown Voltage vs Ambient Temperature



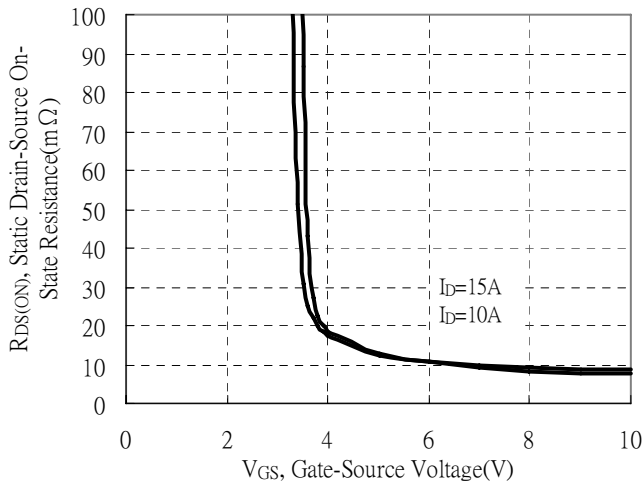
Static Drain-Source On-State resistance vs Drain Current



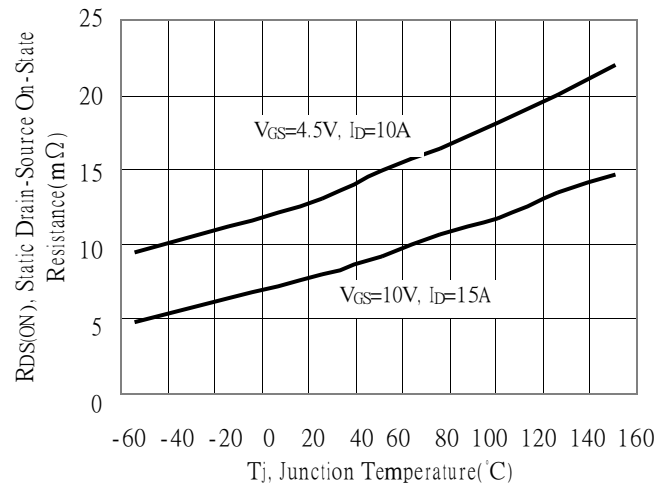
Reverse Drain Current vs Source-Drain Voltage



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

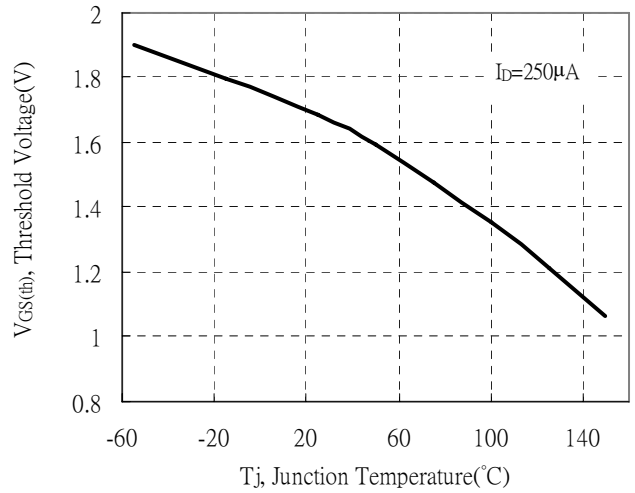
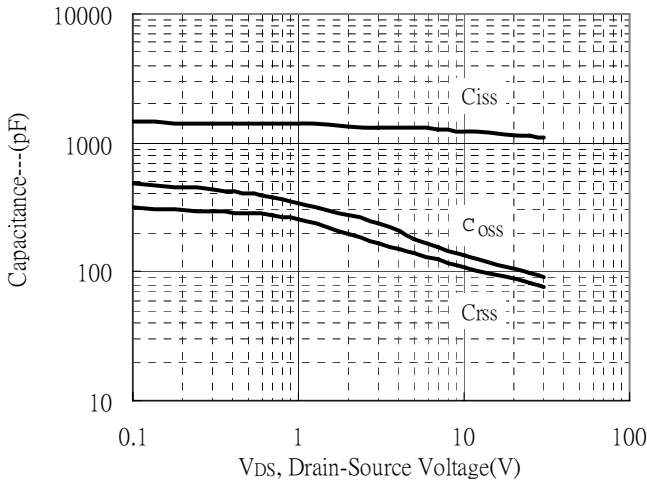


Drain-Source On-State Resistance vs Junction Temperature

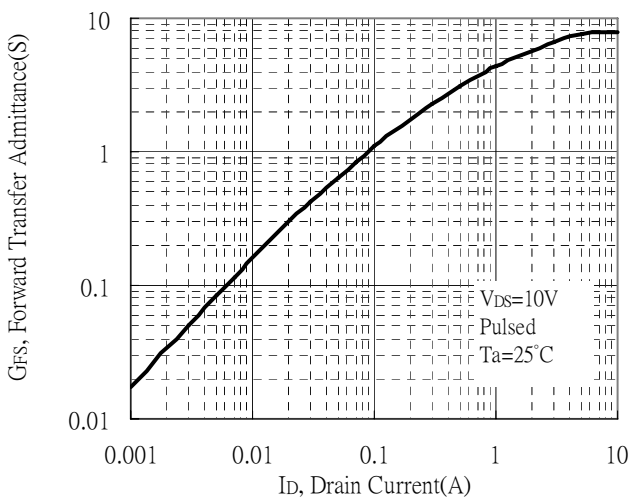


Typical Characteristics(Cont.)

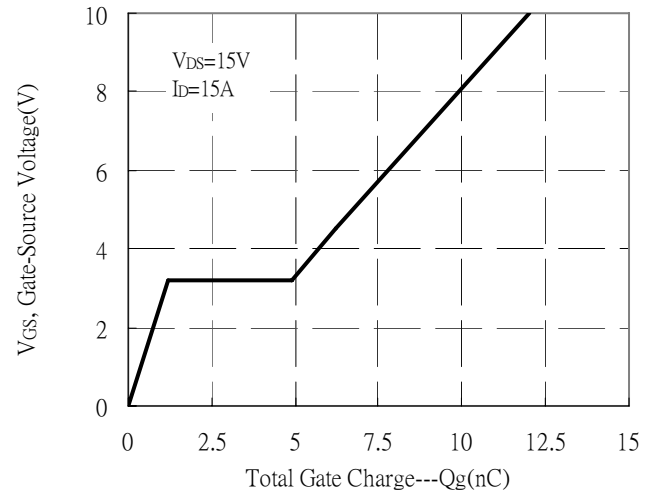
Capacitance vs Drain-to-Source Voltage



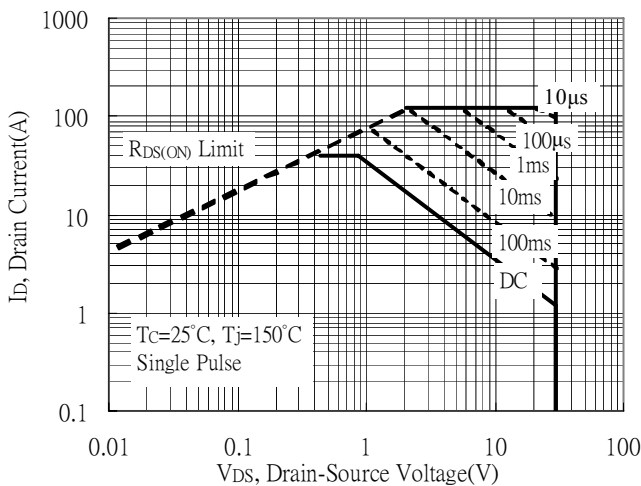
Forward Transfer Admittance vs Drain Current



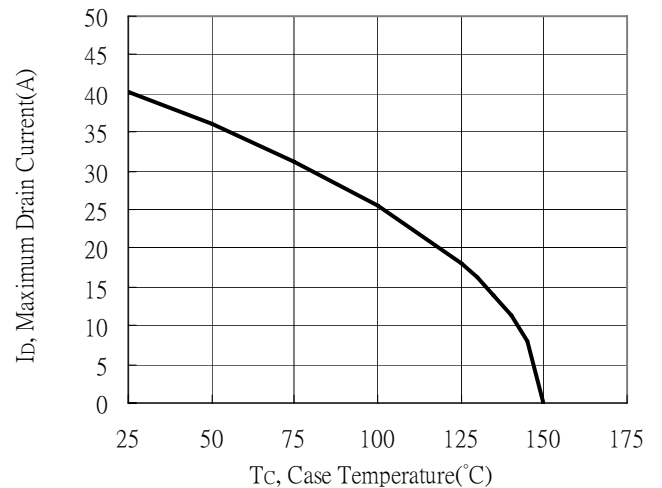
Gate Charge Characteristics



Maximum Safe Operating Area

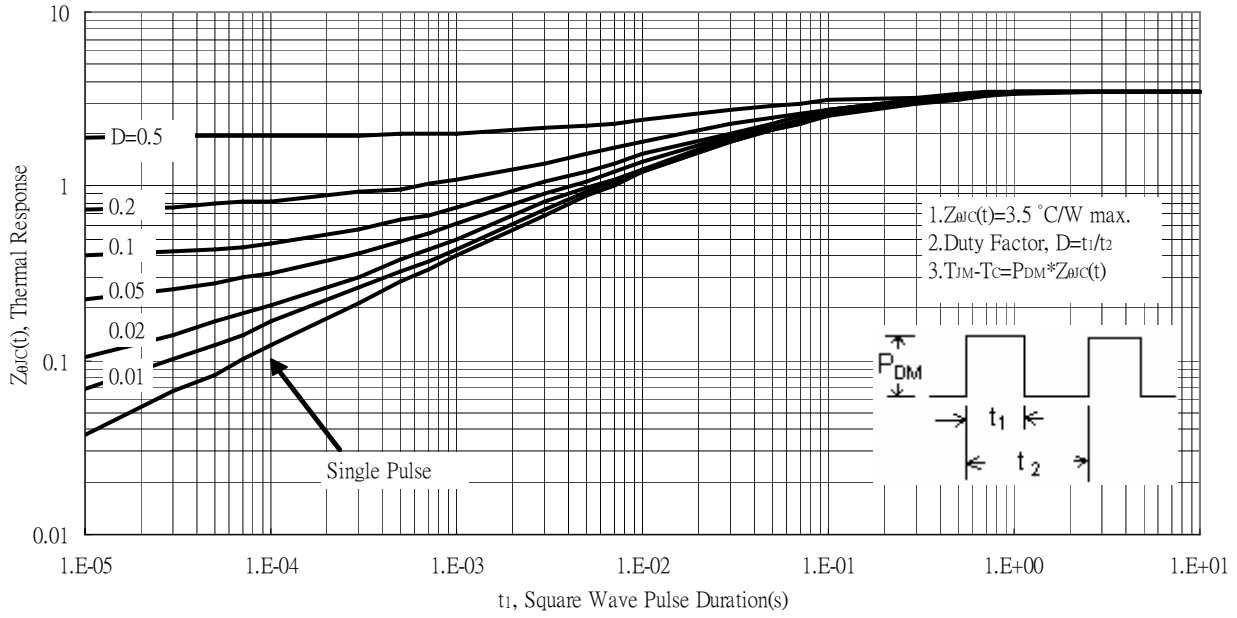


Maximum Drain Current vs Case Temperature

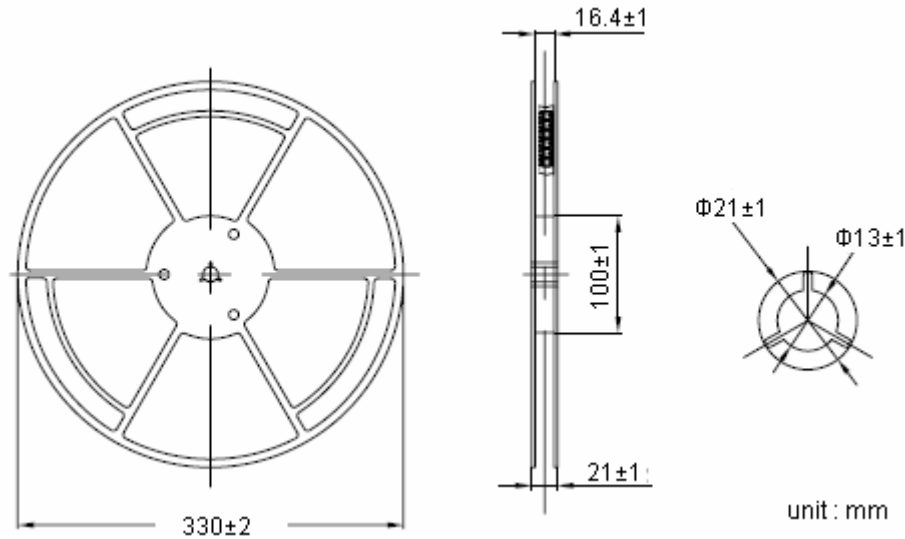


Typical Characteristics(Cont.)

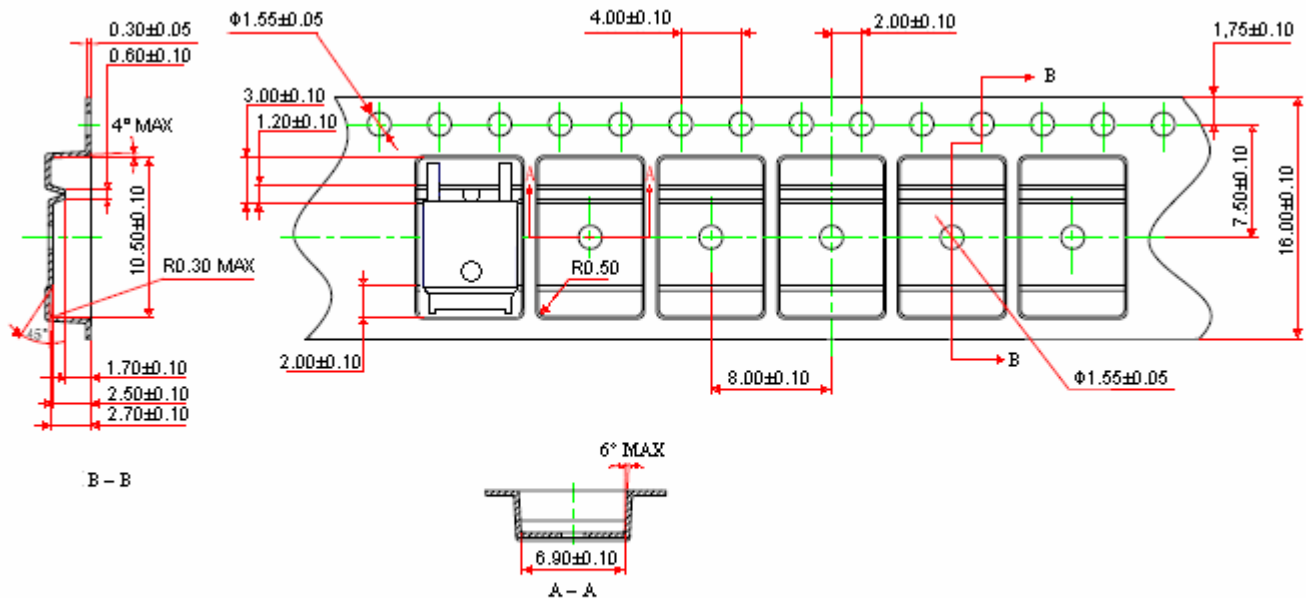
Transient Thermal Response Curves



Reel Dimension



Carrier Tape Dimension

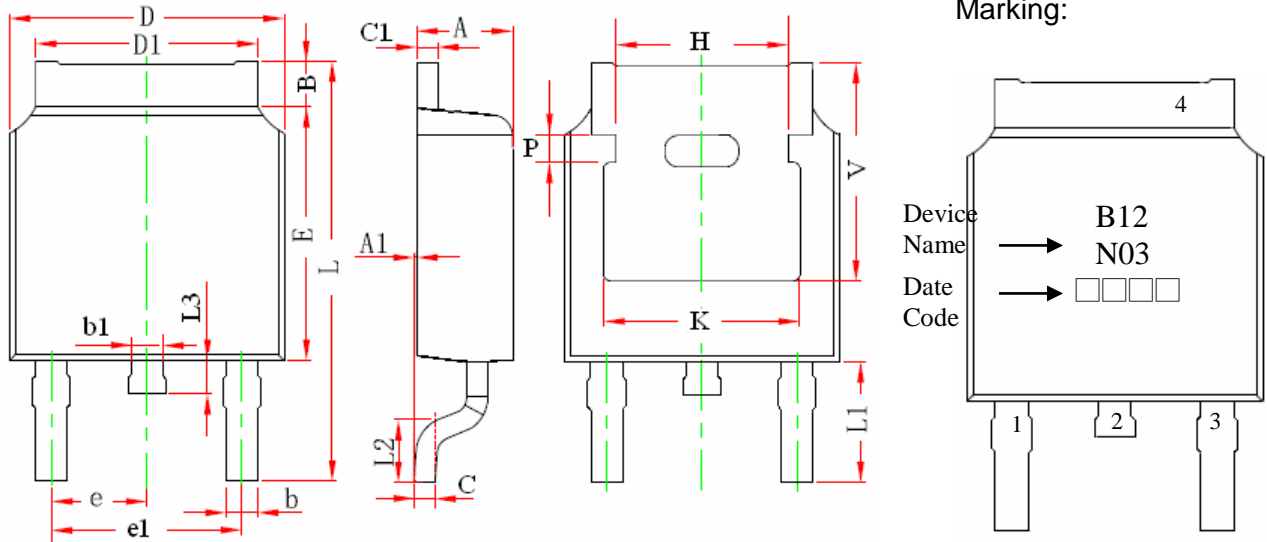


Notes:

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