

N-Channel Enhancement Mode Power MOSFET

Features:

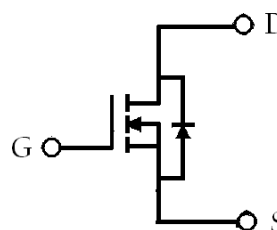
- Low On Resistance
- Simple Drive Requirement
- Low Gate Charge
- Fast Switching Characteristic
- RoHS compliant package

TO-252(DPAK)



G D S

BV_{DSS}	150V
$I_D @ T_C=25^{\circ}C, V_{GS}=10V$	27A
$R_{DS(ON)} @ V_{GS}=10V, I_D=15A$	44.3 mΩ(typ)
$R_{DS(ON)} @ V_{GS}=4.5V, I_D=10A$	43.0 mΩ(typ)



G: Gate D: Drain S: Source

Ordering Information

Device	Package	Shipping
KJA50N15	TO-252 (Pb-free lead plating package)	2500 pcs / Tape & Reel

Absolute Maximum Ratings ($T_C=25^{\circ}\text{C}$)

Parameter	Symbol	Limits	Unit	
Drain-Source Voltage (Note 1)	V_{DS}	150	V	
Gate-Source Voltage	V_{GS}	± 20		
Continuous Drain Current @ $T_C=25^{\circ}\text{C}$, $V_{GS}=10\text{V}$ (Note 1)	I_D	27	A	
Continuous Drain Current @ $T_C=100^{\circ}\text{C}$, $V_{GS}=10\text{V}$ (Note 1)		19		
Continuous Drain Current @ $T_A=25^{\circ}\text{C}$, $V_{GS}=10\text{V}$ (Note 4)	I_{DSM}	4.0		
Continuous Drain Current @ $T_A=70^{\circ}\text{C}$, $V_{GS}=10\text{V}$ (Note 4)		3.2		
Pulsed Drain Current @ $V_{GS}=10\text{V}$ (Note 3)	I_{DM}	100		
Avalanche Current @ $L=0.1\text{mH}$ (Note 3)	I_{AS}	13		
Single Pulse Avalanche Energy @ $L=1\text{mH}$, $I_D=13\text{Amps}$, $V_{DD}=50\text{V}$ (Note 5)	E_{AS}	84	mJ	
Power Dissipation	P_D	$T_C=25^{\circ}\text{C}$ (Note 1)	100	W
		$T_C=100^{\circ}\text{C}$ (Note 1)	50	
	P_{DSM}	$T_A=25^{\circ}\text{C}$ (Note 2)	2	
		$T_A=70^{\circ}\text{C}$ (Note 2)	1.3	
Operating Junction and Storage Temperature	T_j, T_{stg}	-55~+175	$^{\circ}\text{C}/\text{W}$	

*Drain current limited by maximum junction temperature

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	1.5	$^{\circ}\text{C}/\text{W}$
Thermal Resistance, Junction-to-ambient, max (Note2)	$R_{th,j-a}$	62.5	
Thermal Resistance, Junction-to-ambient, max (Note4)		90	

- Note : 1. The power dissipation P_D is based on $T_{J(MAX)}=175^{\circ}\text{C}$, 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 $R_{\theta JA}$ is measured with the device mounted on 1 in² FR-4 board with 2 oz. copper, in a still air environment with $T_A=25^{\circ}\text{C}$. The power dissipation P_{DSM} is based on $R_{\theta JA}$ and the maximum allowed junction temperature of 150 C. The value in any given application depends on the user's specific board design.
3. Pulse width limited by junction temperature $T_{J(MAX)}=175^{\circ}\text{C}$. Ratings are based on low frequency and low duty cycles to keep initial $T_J=25^{\circ}\text{C}$.
4. When mounted on the minimum pad size recommended (PCB mount), $t \leq 10\text{s}$.
5. 100% tested by conditions of $L=0.1\text{mH}$, $I_{AS}=5\text{A}$, $V_{GS}=10\text{V}$, $V_{DD}=25\text{V}$

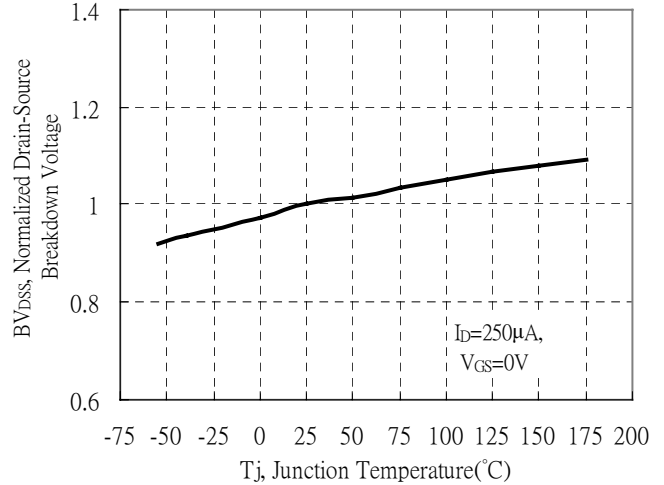
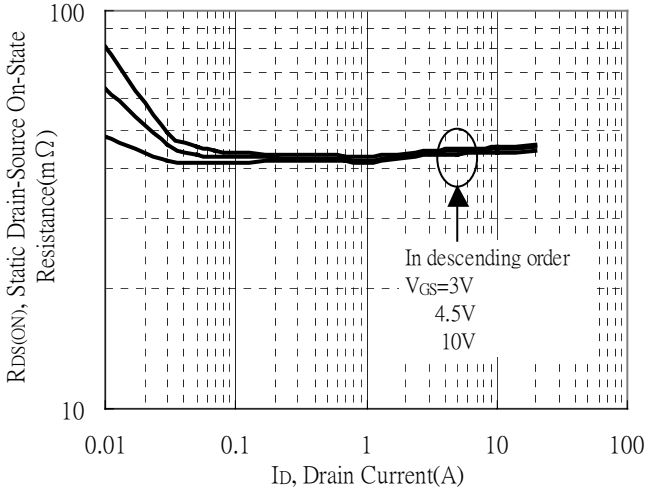
Characteristics (T_j=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	150	-	-	V	V _{GS} =0V, I _D =250μA
ΔBV _{DSS} /ΔT _j	-	0.1	-	V/°C	Reference to 25°C, I _D =250μA
V _{GS(th)}	0.5	-	1.2	V	V _{DS} = V _{GS} , I _D =250μA
*G _{FS}	-	43.5	-	S	V _{DS} =10V, I _D =10A
I _{GSS}	-	-	±100	nA	V _{GS} = ±20V
I _{DSS}	-	-	1	μA	V _{DS} =120V, V _{GS} =0V
	-	-	25		V _{DS} =120V, V _{GS} =0V, T _j =125°C
*R _{DS(ON)}	-	44.3	56	mΩ	V _{GS} =10V, I _D =15A
	-	43.0	56		V _{GS} =4.5V, I _D =10A
Dynamic					
*Q _g	-	69.9	-	nC	I _D =15A, V _{DS} =120V, V _{GS} =10V
*Q _{gs}	-	3.8	-		
*Q _{gd}	-	12.5	-		
*t _{d(ON)}	-	11.6	-	ns	V _{DS} =75V, I _D =15A, V _{GS} =10V, R _G =6Ω
*t _r	-	21	-		
*t _{d(OFF)}	-	108.2	-		
*t _f	-	83.8	-		
C _{iss}	-	2161	-	pF	V _{GS} =0V, V _{DS} =80V, f=1MHz
C _{oss}	-	96	-		
C _{rss}	-	19	-		
R _g	-	1	-		
Source-Drain Diode					
*I _S	-	-	27	A	
*I _{SM}	-	-	100		
*V _{SD}	-	0.8	1.2	V	I _S =15A, V _{GS} =0V
*t _{rr}	-	41	-	ns	V _{GS} =0V, I _F =15A, dI _F /dt=100A/μs
*Q _{rr}	-	85	-	nC	

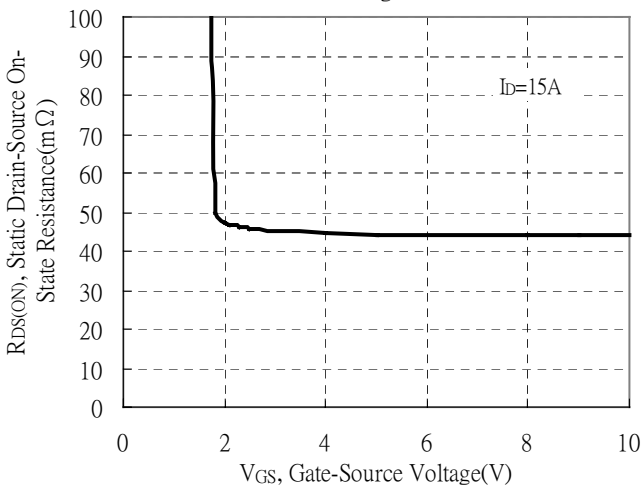
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Typical Characteristics

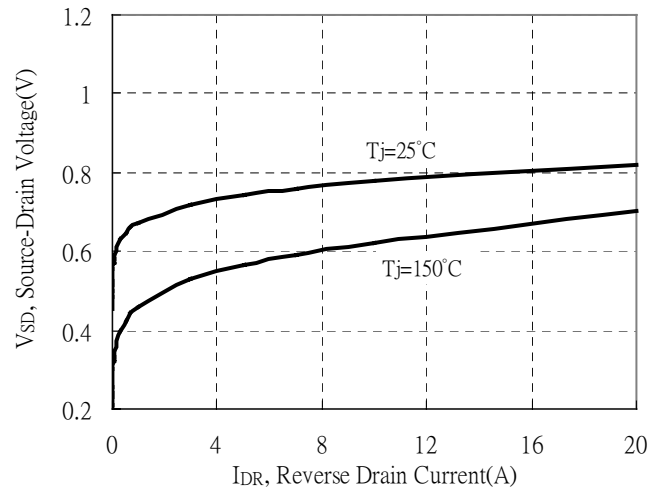
Static Drain-Source On-State resistance vs Drain Current



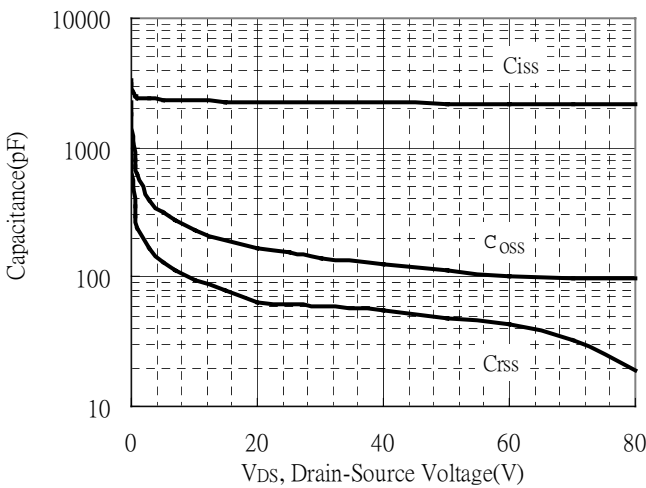
Static Drain-Source On-State Resistance vs Gate-Source Voltage



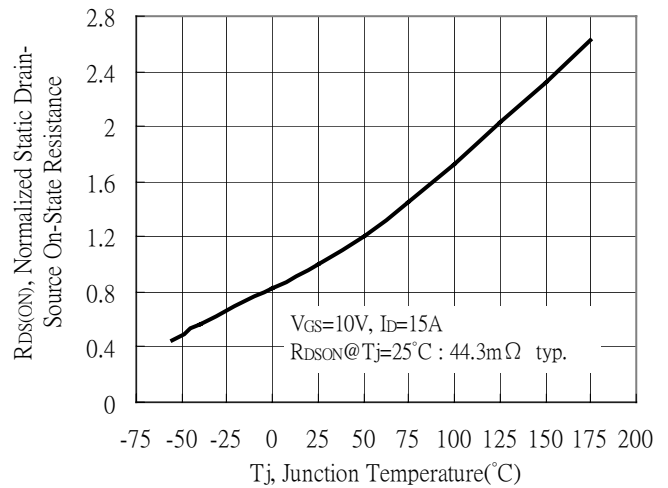
Reverse Drain Current vs Source-Drain Voltage



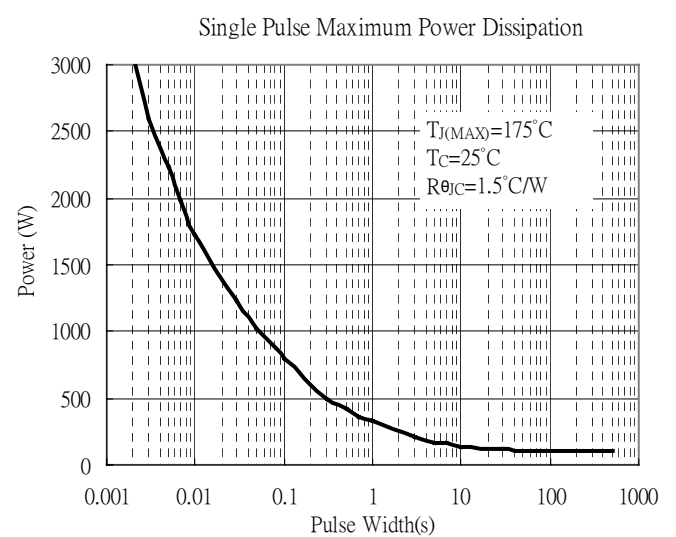
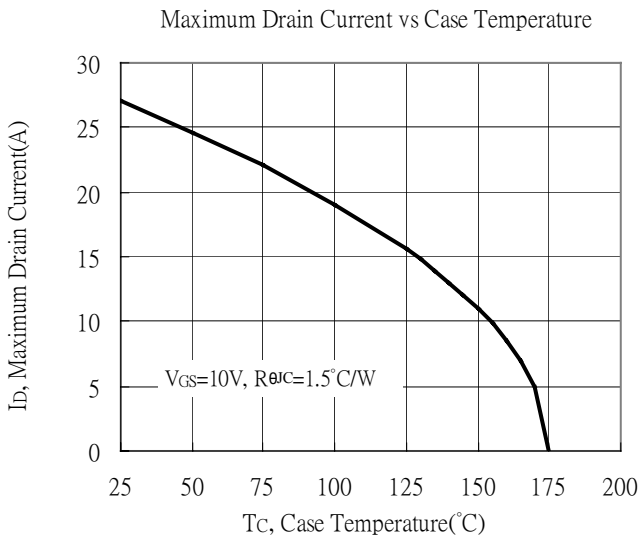
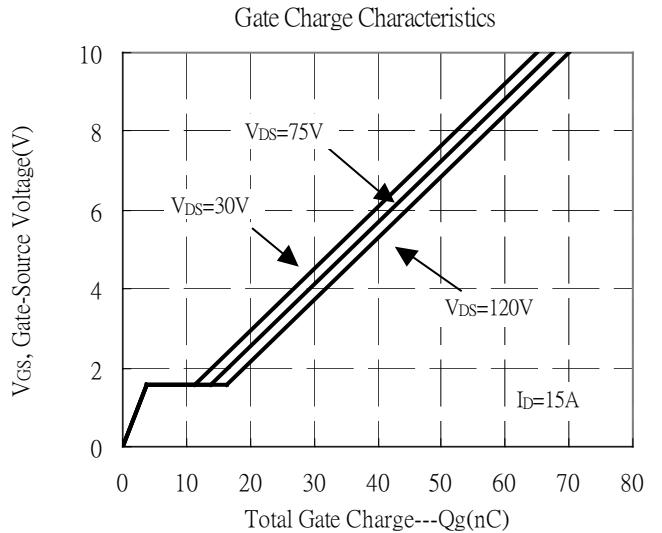
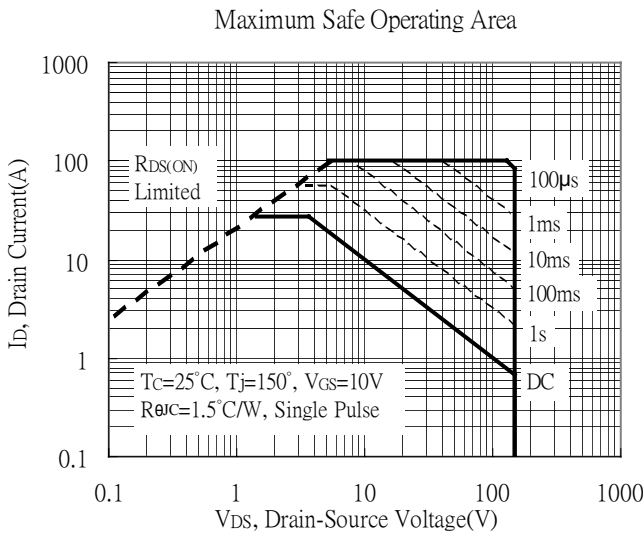
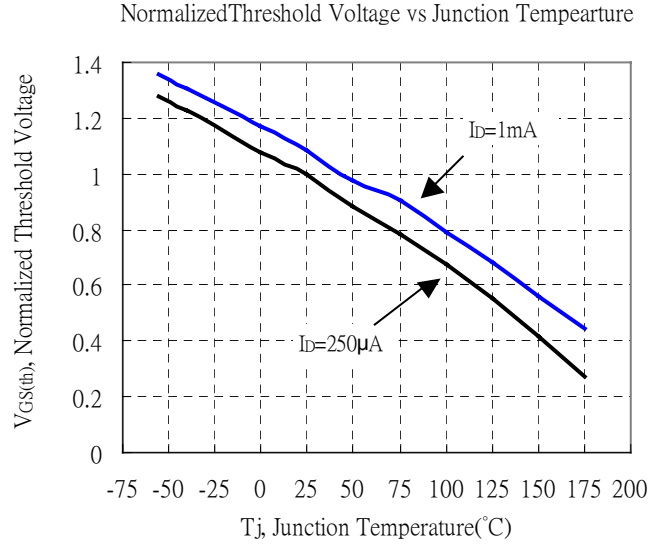
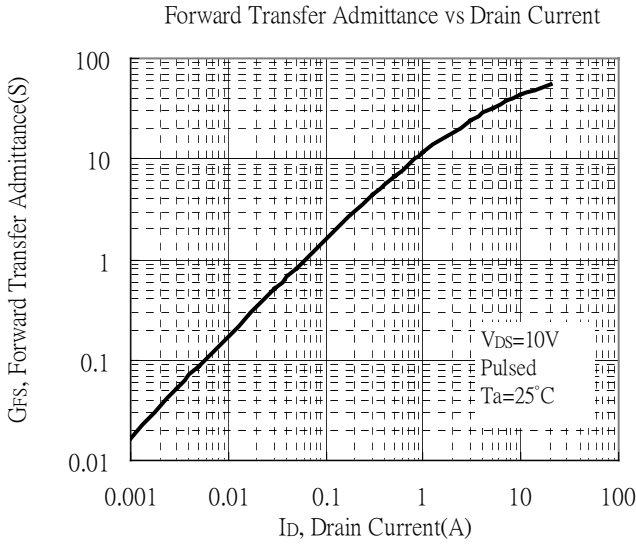
Capacitance vs Drain-to-Source Voltage



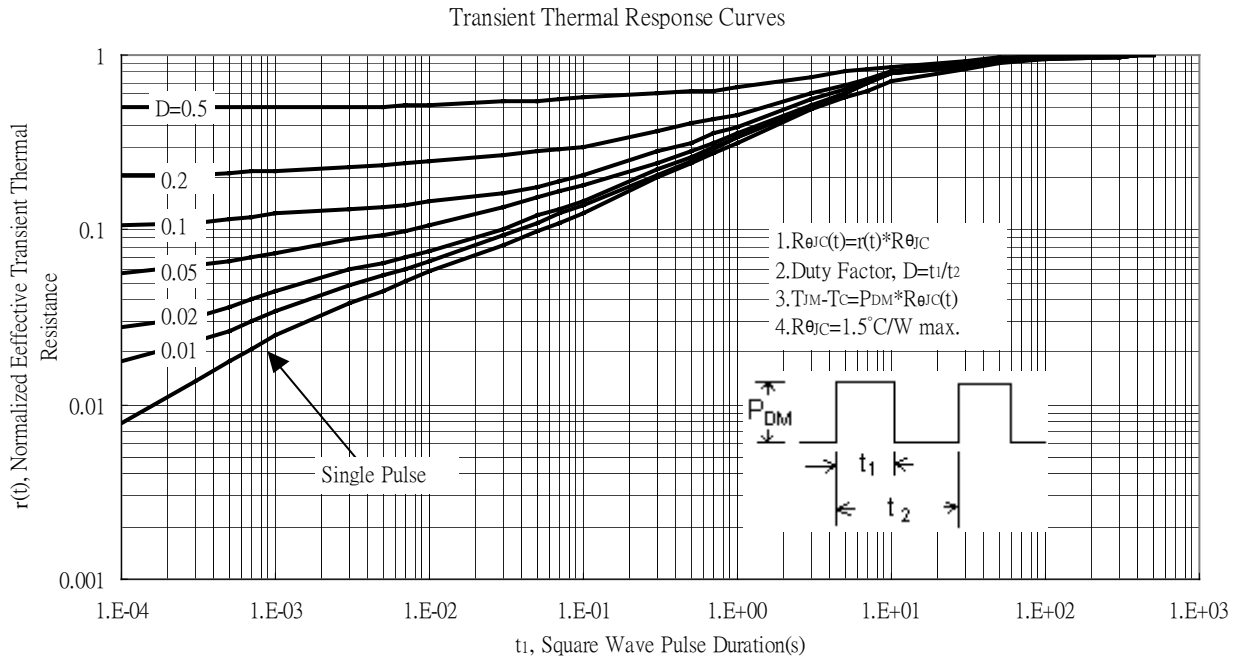
Drain-Source On-State Resistance vs Junction Temperature



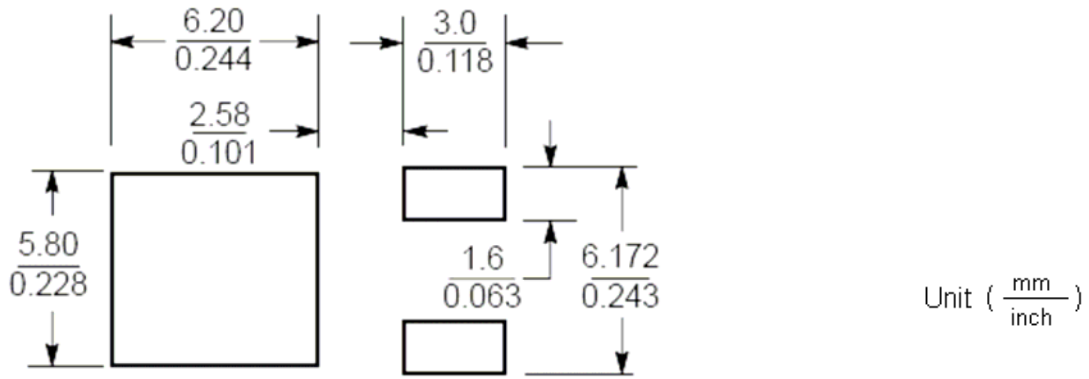
Typical Characteristics(Cont.)



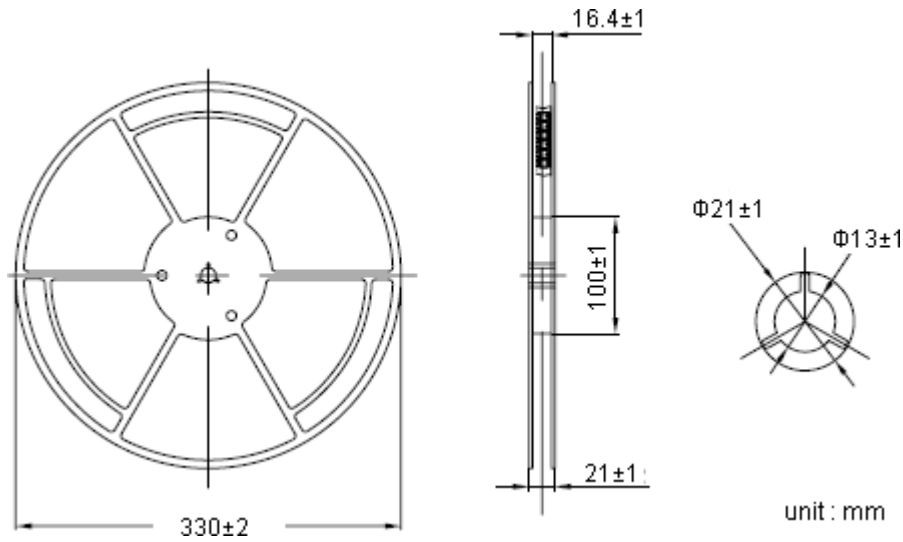
Typical Characteristics(Cont.)



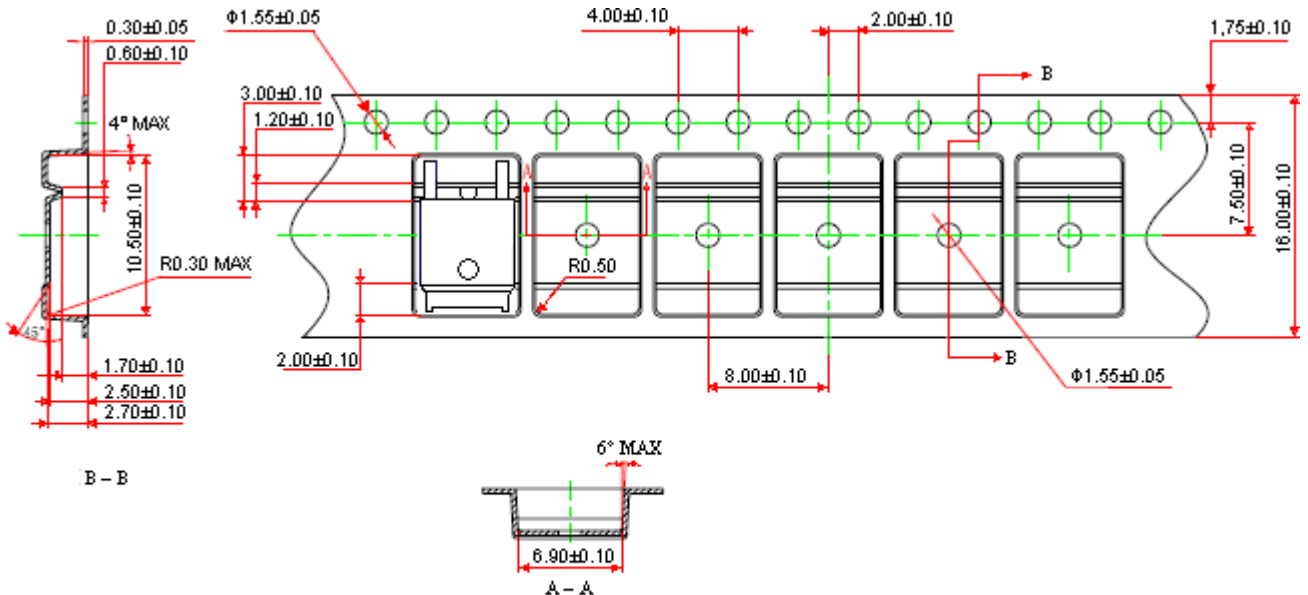
Recommended soldering footprint



Reel Dimension



Carrier Tape Dimension

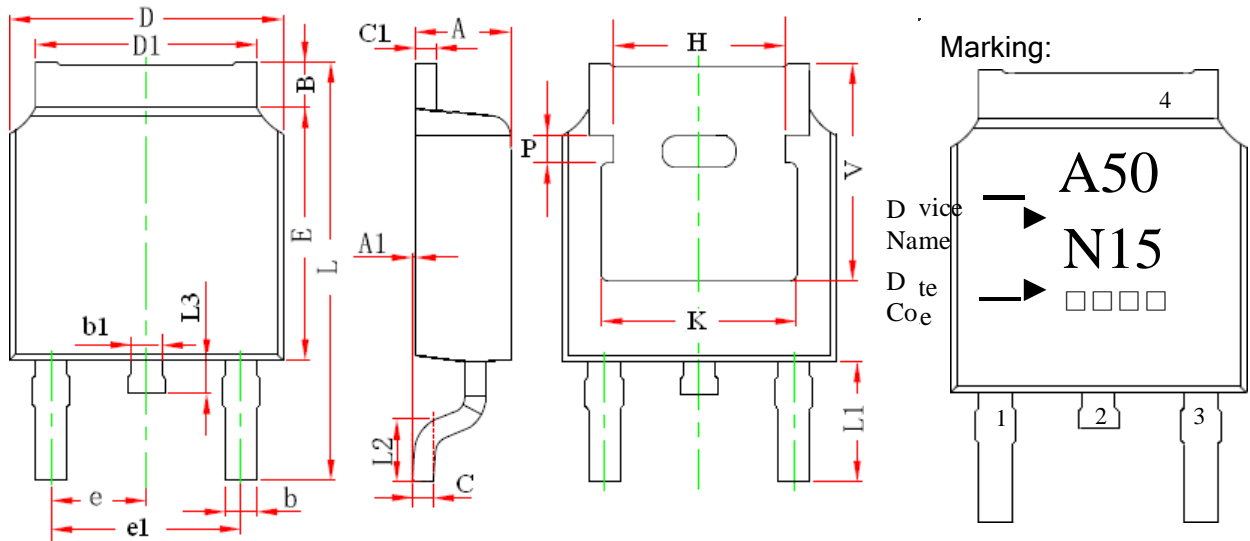


Notes:

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

Date Code(counting from left to right) :

1st code: year code, the last digit of Christian year

2nd 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

3rd and 4th codes : production serial number, 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	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