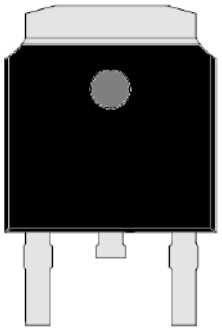
P-Channel Enhancement Mode Power MOSFET

Features:

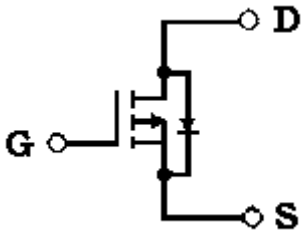
- Single Drive Requirement
- Low On-resistance
- Fast switching Characteristic
- Pb-free lead plating and halogen-free package

TO-252(DPAK)



G D S

BV_{DSS}	**-60V**
I_D @V_{GS}=-10V, T_C=25°C	**-56A**
I_D @V_{GS}=-10V, T_A=25°C	**-10A**
$R_{DS(ON)}$@V_{GS}=-10V, I_D=-20A	**10.6mΩ(typ)**



G：Gate
D：Drain
S：Source

Ordering Information

Device	Package	Shipping
KJE010P06	TO-252 (Pb-free lead plating and halogen-free package)	2500 pcs / Tape & Reel

Absolute Maximum Ratings (Ta=25°C)

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		V_{DS}	-60	V
Gate-Source Voltage		V_{GS}	±30	
Continuous Drain Current @V_{GS}=-10V, T_C=25°C		I_D	-56	A
Continuous Drain Current @V_{GS}=-10V, T_C=100°C			-35.5	
Continuous Drain Current @V_{GS}=-10V, T_A=25°C			-10	
Continuous Drain Current @V_{GS}=-10V, T_A=100°C			-6.3	
Pulsed Drain Current		I_{DM}	-224 *1	
Single Pulse Avalanche Current @ L=0.1mH		I_{AS}	-60	
Single Pulse Avalanche Energy @ L=1mH, I_{AS}=-30A, V_{DD}=-25V		E_{AS}	450 *2	mJ
Power Dissipation	T_C=25℃	P_D	78 *4	W
	T_C=100℃		31 *4	
	T_A=25℃		2.5	
	T_A=100℃		1.0	
Operating Junction and Storage Temperature		Tj, Tstg	-55~+150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{\theta JC}$	1.6	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{\theta JA}$	50 *3	

Note : *1. Pulse width limited by safe operating area.

*2 . 100% tested by conditions of V_{DD}=-25V, L=0.1mH, V_{GS}=-10V, I_{AS}=-30A.

*3 . The value of $R_{\theta JA}$ is measured with the device mounted on 1 in^2 FR-4 board with 2 oz. copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design.

*4 . The power dissipation P_D is more useful in setting the upper dissipation limit for cases where additional heatsinking is used. It is used to determined the current rating, when this rating falls below the package limit.

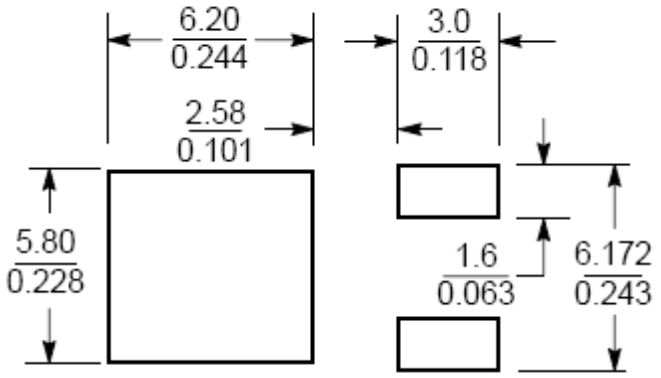
Characteristics (Tj=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	-60	-	-	V	V_{GS}=0V, I_D=-250μA
$V_{GS(th)}$	-2	-	-4		V_{DS} = V_{GS}, I_D=-250μA
G_{FS}	-	26.4	-	S	V_{DS} =-10V, I_D=-20A
I_{GSS}	-	-	±100	nA	V_{GS}=±30V, V_{DS}=0V
I_{DSS}	-	-	-1	μA	V_{DS} =-48V, V_{GS} =0V
	-	-	-25		V_{DS} =-48V, V_{GS} =0V, Tj=70°C
*$R_{DS(ON)}$	-	10.6	14	mΩ	V_{GS} =-10V, I_D=-20A
Dynamic					
*Qg	-	67	-	nC	I_D=-20A, V_{DS}=-48V, V_{GS}=-10V
*Qgs	-	11.5	-		
*Qgd	-	26	-		

*$t_{d(ON)}$	-	26.8	-	ns	V_{DS}=-30V, V_{GS}=-10V, R_G=1Ω , I_D=-20A
*tr	-	27.8	-		
*$t_{d(OFF)}$	-	59.4	-		
*t_f	-	16.4	-		
Ciss	-	3124	-	pF	V_{GS}=0V, V_{DS}=-30V, f=1MHz
Coss	-	353	-		
Crss	-	205	-		
Rg	-	3.7	-	Ω	f=1MHz
Source-Drain Diode					
* I_S	-	-	-56	A	
*I_{SM}	-	-	-224		
*V_{SD}	-	-0.84	-1.2	V	I_S=-20A, V_{GS}=0V
*trr	-	23.4	-	ns	I_F=-20A, V_{GS}=0V, dI_F/dt=100A/μs
*Qrr	-	20.8	-	nC	

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

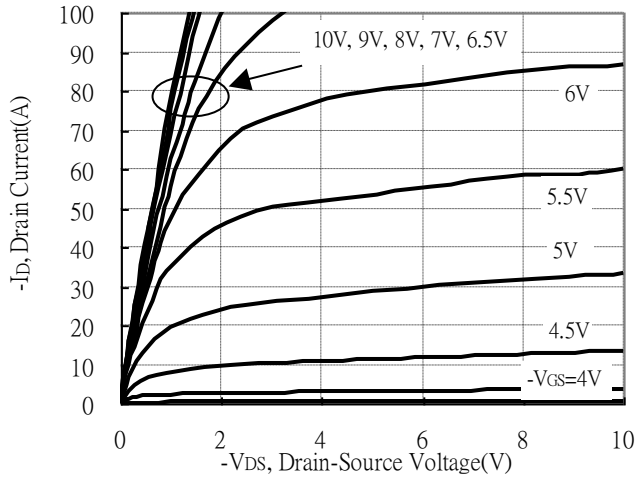
Recommended soldering footprint



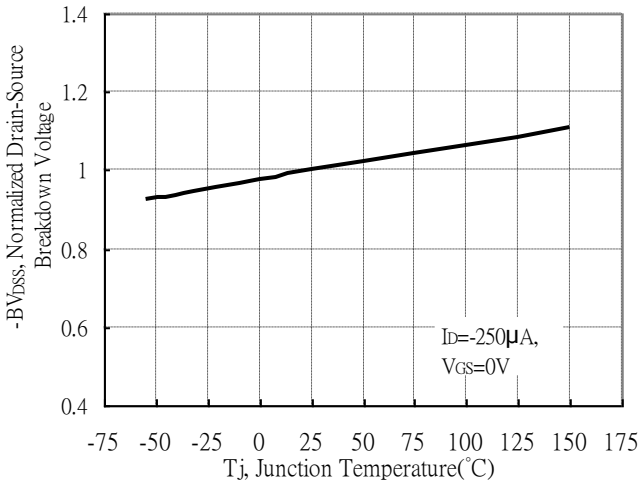
Unit (mm / inch)

Typical Characteristics

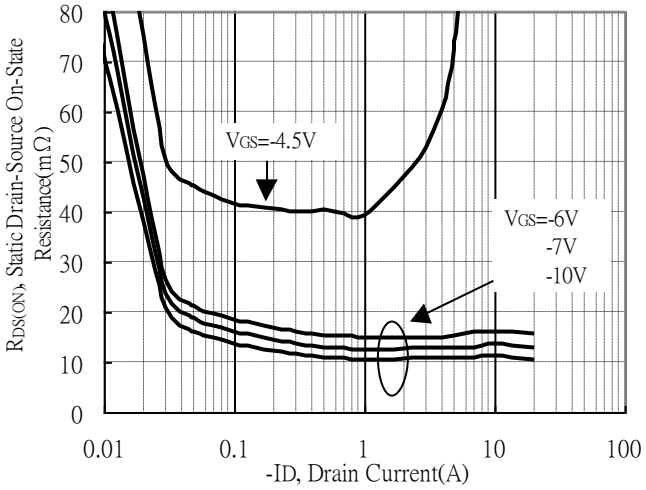
Typical Output Characteristics



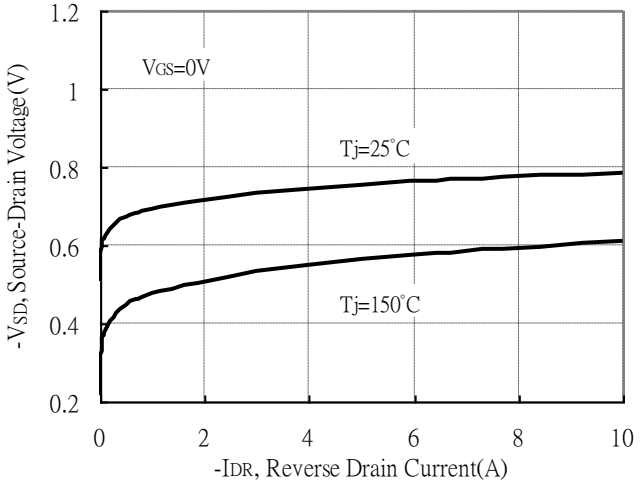
Brekdown Voltage vs Ambient Temperature



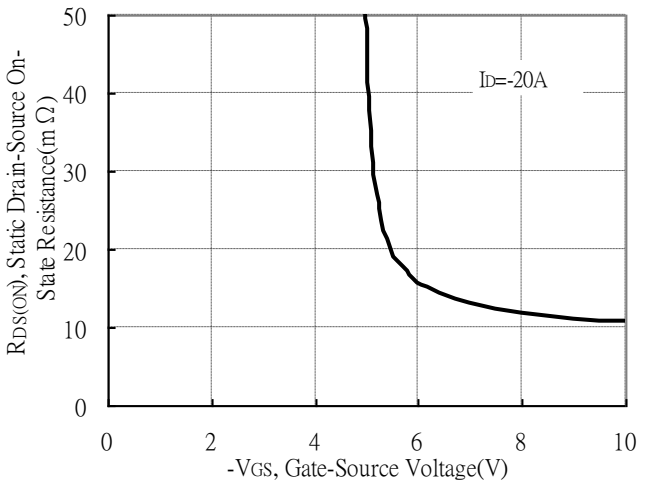
Static Drain-Source On-State resistance vs Drain Current



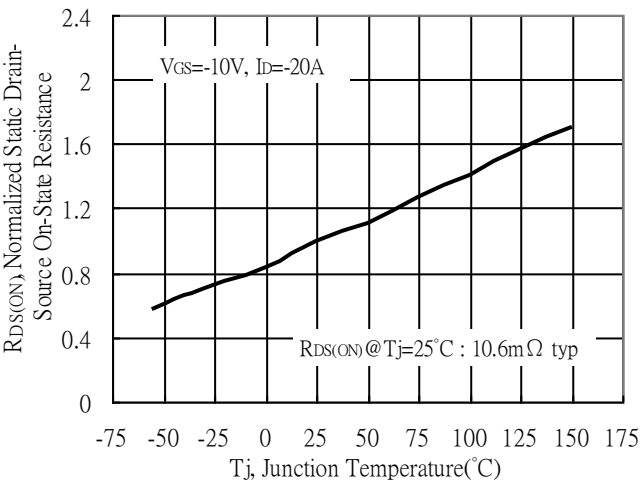
Reverse Drain Current vs Source-Drain Voltage



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

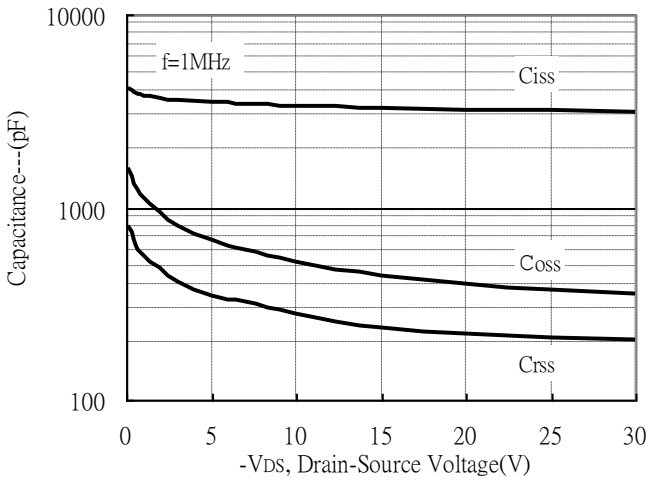


Drain-Source On-State Resistance vs Junction Tempearture

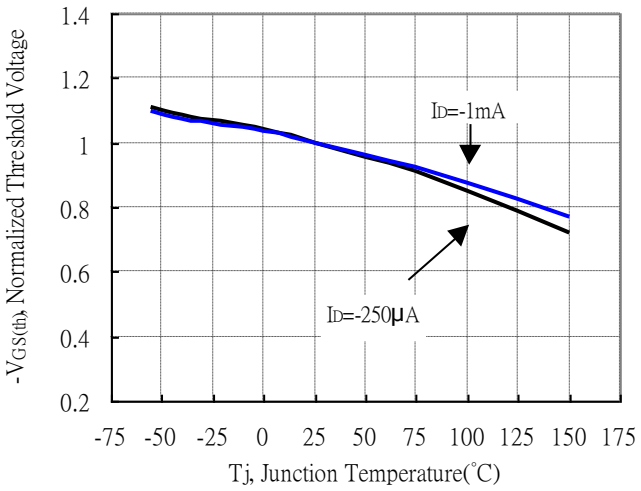


Typical Characteristics(Cont.)

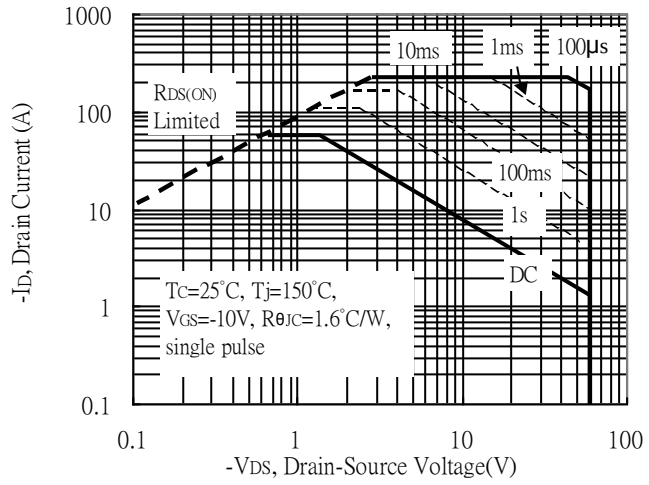
Capacitance vs Drain-to-Source Voltage



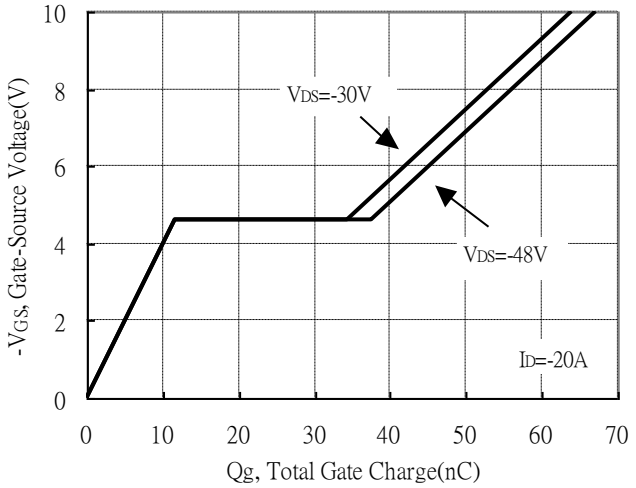
Threshold Voltage vs Junction Tempearture



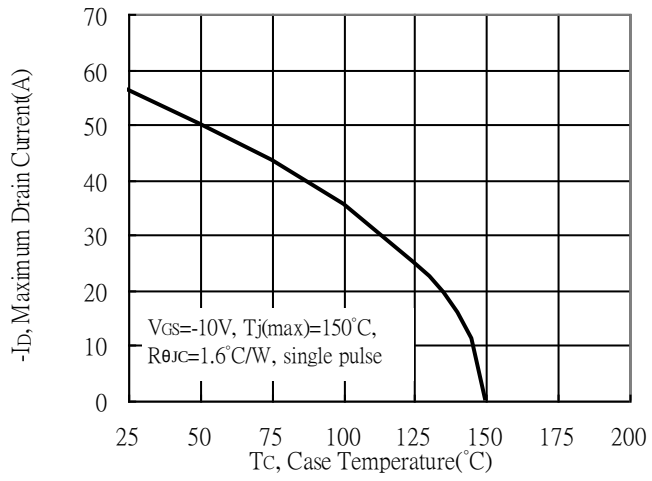
Maximum Safe Operating Area



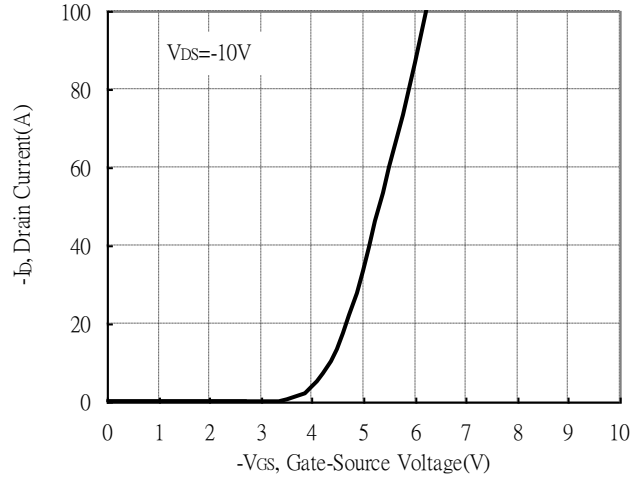
Gate Charge Characteristics



Maximum Drain Current vs Case Temperature

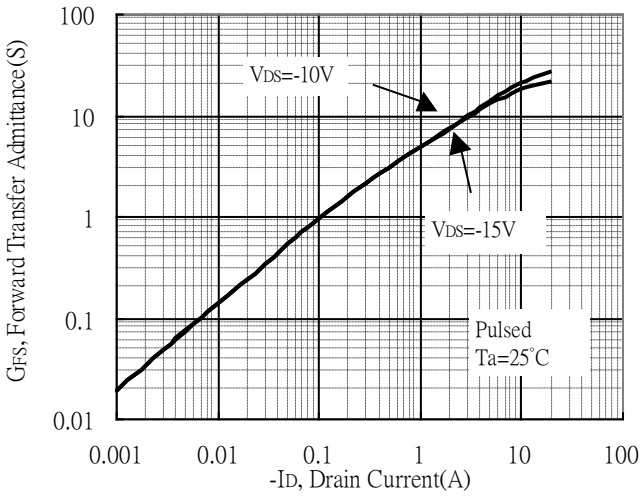


Typical Transfer Characteristics

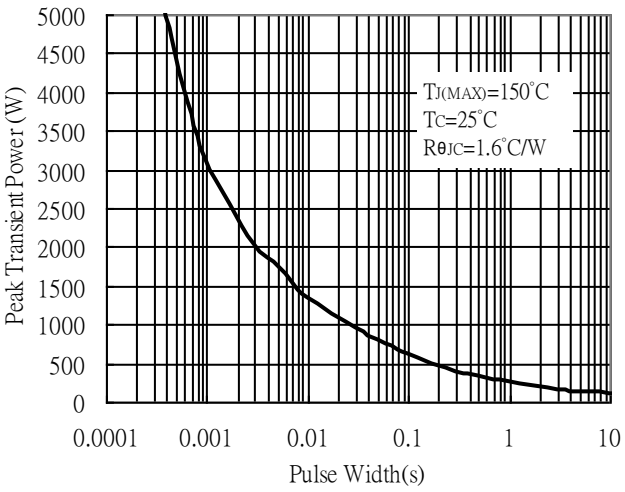


Typical Characteristics(Cont.)

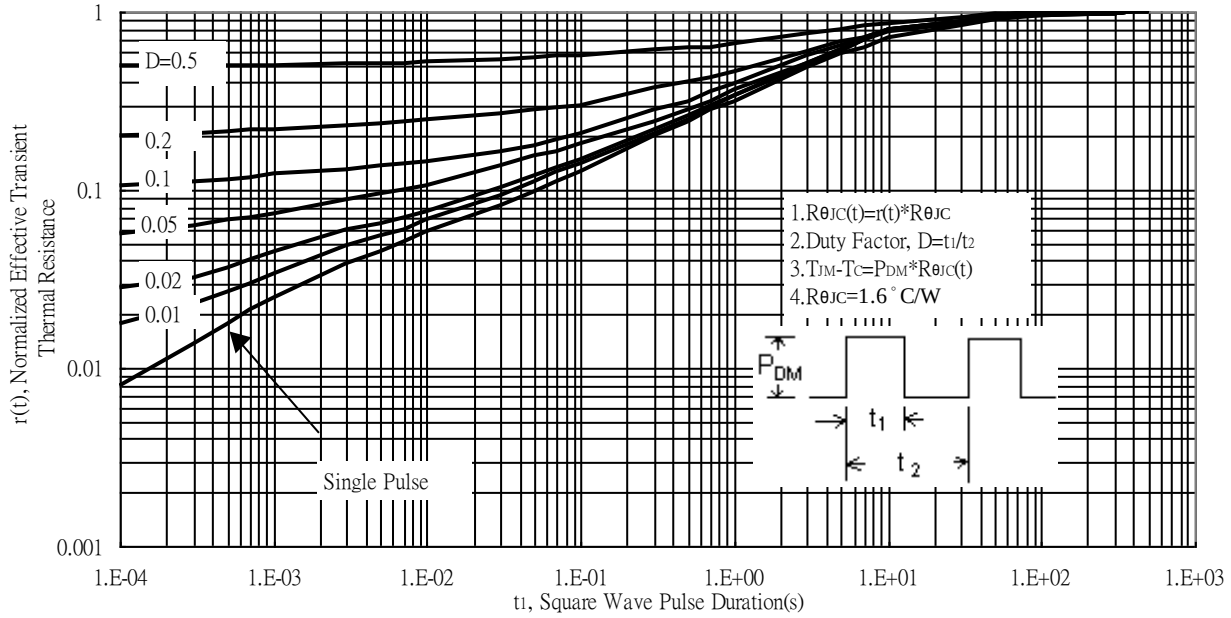
Forward Transfer Admittance vs Drain Current



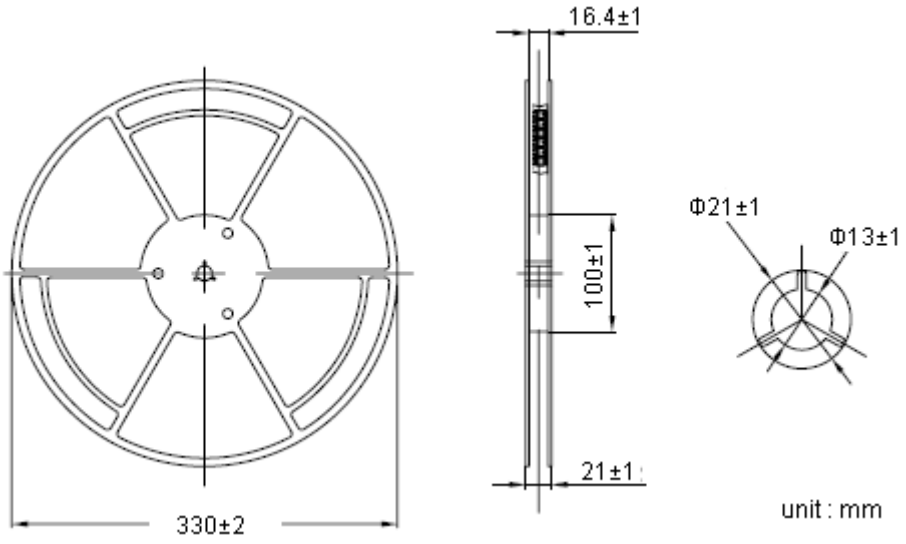
Single Pulse Maximum Power Dissipation



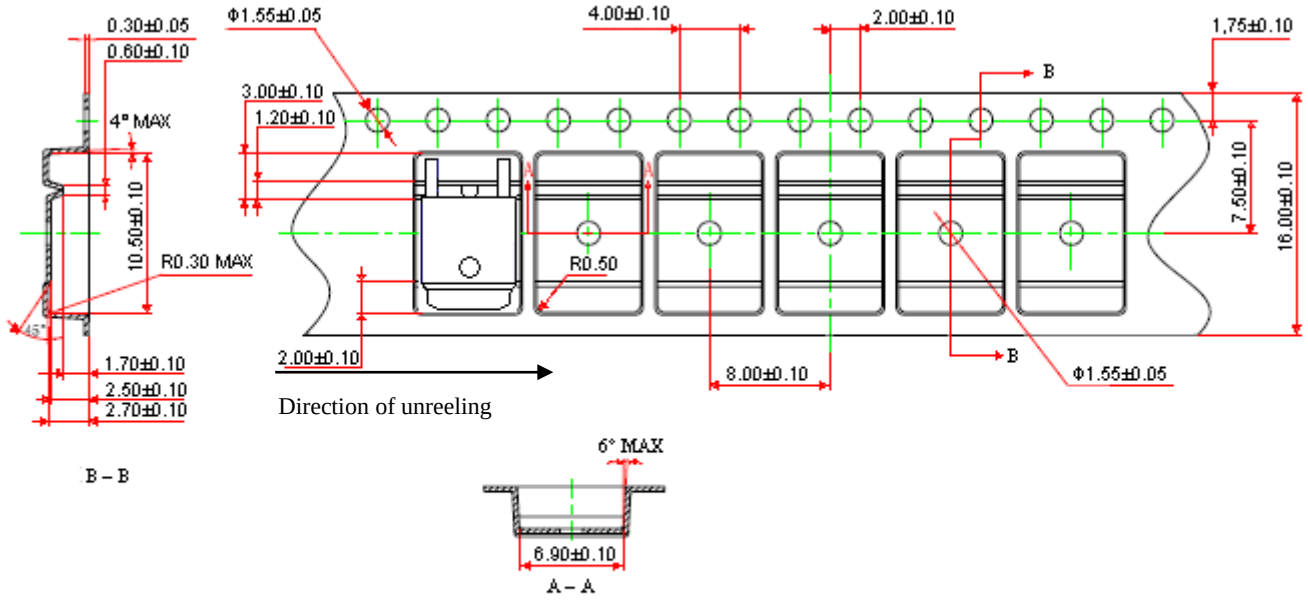
Transient Thermal Response Curves



Reel Dimension

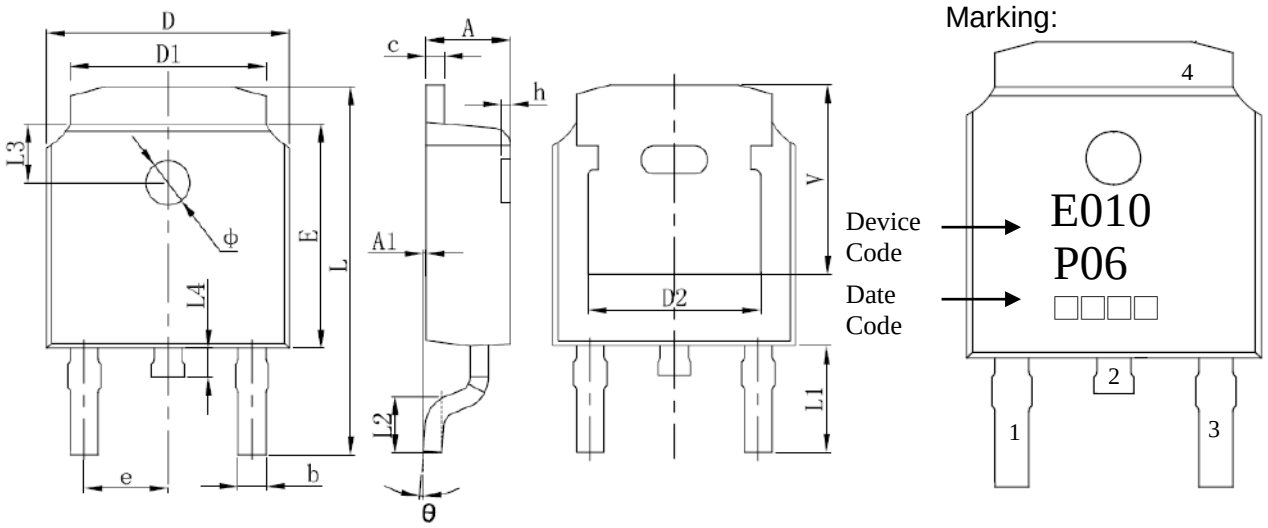


Carrier Tape Dimension



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} Ω/□~ 10^{11} Ω/□ 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 :
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	