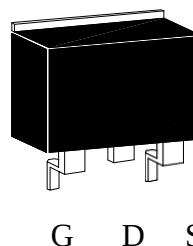


N-Channel Enhancement Mode Power MOSFET

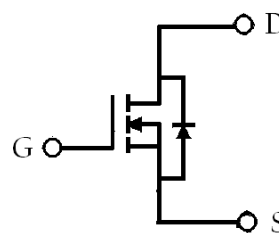
Features:

- Simple Drive Requirement
- Fast Switching Characteristic
- RoHS compliant package

TO-263



BV_{DSS}	60V
$I_D @ V_{GS}=10V, T_C=25^\circ C$	60A
$R_{DS(on)(TYP)} @ V_{GS}=10V, I_D=20A$	3.3m Ω
$R_{DS(on)(TYP)} @ V_{GS}=7V, I_D=20A$	3.5m Ω



G : Gate D : Drain S : Source

Ordering Information

Device	Package	Shipping
KUE2D4N06	TO-263 (Pb-free lead plating and RoHS compliant package)	800 pcs / Tape & Reel

Absolute Maximum Ratings (T_C=25°C, unless otherwise noted)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	±30	
Continuous Drain Current @ T _C =25°C(silicon limit)	I _D	188	A
Continuous Drain Current @ T _C =100°C(silicon limit)		133	
Continuous Drain Current @ T _C =25°C(package limit) (Note 1)		60	
Pulsed Drain Current (Note 3)	I _{DM}	480	
Continuous Drain Current @ T _A =25°C (Note 2)	I _{DSM}	15	
Continuous Drain Current @ T _A =70°C (Note 2)		12	
Avalanche Current (Note 3)	I _{AS}	120	
Avalanche Energy @ L=1mH, I _D =40A, R _G =25Ω (Note 4)	E _{AS}	800	mJ
Power Dissipation	P _D	T _C =25°C (Note 1)	W
		T _C =100°C (Note 1)	
Power Dissipation	P _{DSM}	T _A =25°C (Note 2)	
		T _A =70°C (Note 2)	
Operating Junction and Storage Temperature	T _J , T _{stg}	-55~+175	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{th,j-c}	0.45	°C/W
Thermal Resistance, Junction-to-ambient, max, (Note 2)	R _{th,j-a}	62.5	

Note : 1.The power dissipation P_D is based on T_{J(MAX)}=175 °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_{θJA} 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 °C. The power dissipation P_{DSM} is based on R_{θJA} and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design, and the maximum temperature of 175°C may be used if the PCB allows it.

3. Pulse width limited by junction temperature T_{J(MAX)}=175 °C. Ratings are based on low frequency and low duty cycles to keep initial T_J=25°C.

4. 100% tested by conditions of L=1mH, I_{AS}=25A, V_{GS}=15V, V_{DD}=25V.

5. The static characteristics are obtained using <300μs pulses, duty cycle 0.5% maximum.

6. The R_{θJA} is the sum of thermal resistance from junction to case R_{θJC} and case to ambient.

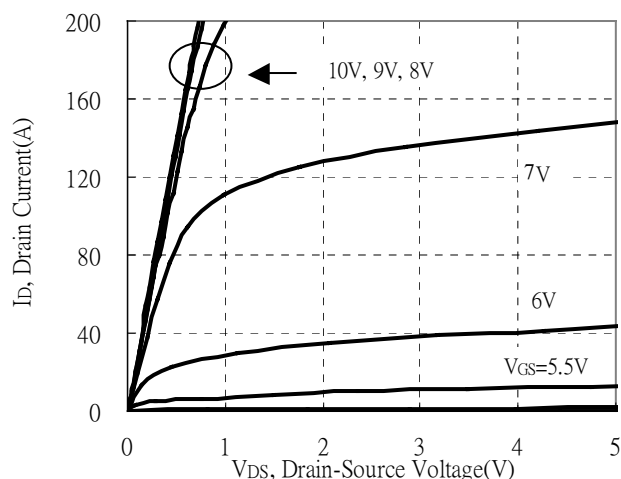
Characteristics (T_c=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	60	-	-	V	V _{GS} =0V, I _D =250μA
V _{GS(th)}	2.0	-	4.0		V _{DS} = V _{GS} , I _D =250μA
G _{FS}	-	40.8	-	S	V _{DS} =10V, I _D =20A
I _{GSS}	-	-	±100	nA	V _{GS} =±30V
I _{DSS}	-	-	1	μA	V _{DS} =48V, V _{GS} =0V
	-	-	25		V _{DS} =48V, V _{GS} =0V, T _j =125°C
*R _{DS(ON)}	-	3.3	4.5	mΩ	V _{GS} =10V, I _D =20A
	-	3.5	5.5		V _{GS} =7V, I _D =20A
Dynamic					
*Q _g	-	124.4	-	nC	I _D =120A, V _{DS} =30V, V _{GS} =10V
*Q _{gs}	-	22.5	-		
*Q _{gd}	-	54.0	-		
*t _{d(ON)}	-	47.6	-	ns	V _{DS} =30V, I _D =60A, V _{GS} =10V, R _G =4.7Ω
*t _r	-	55	-		
*t _{d(OFF)}	-	88.2	-		
*t _f	-	40	-		
C _{iss}	-	5871	-	pF	V _{GS} =0V, V _{DS} =25V, f=1MHz
C _{oss}	-	1011	-		
C _{rss}	-	335	-		
R _g	-	2.9	-	Ω	f=1MHz
Source-Drain Diode					
*I _S	-	-	60	A	
*I _{SM}	-	-	480		
*V _{SD}	-	0.66	0.9	V	I _S =1A, V _{GS} =0V
*t _{rr}	-	41	-	ns	I _F =20A, V _{GS} =0V, dI _F /dt=100A/μs
*Q _{rr}	-	53	-	nC	

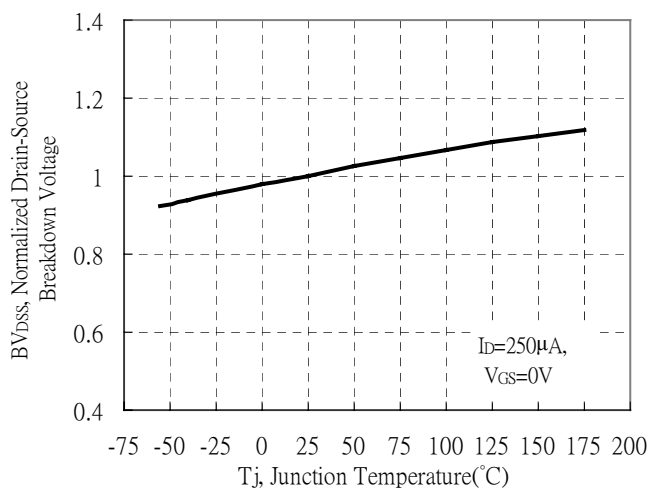
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Typical Characteristics

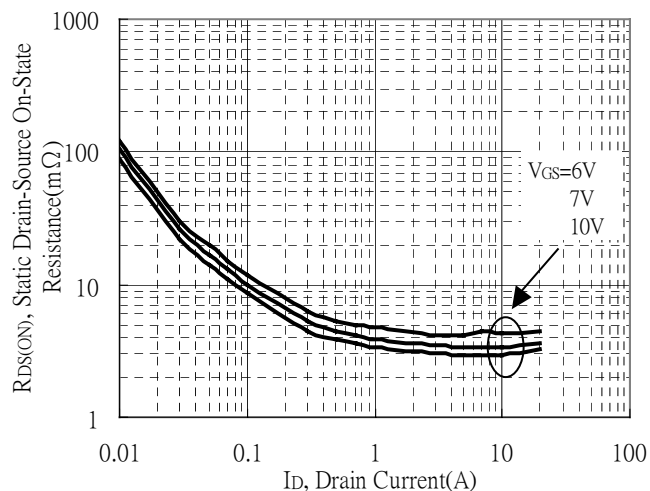
Typical Output Characteristics



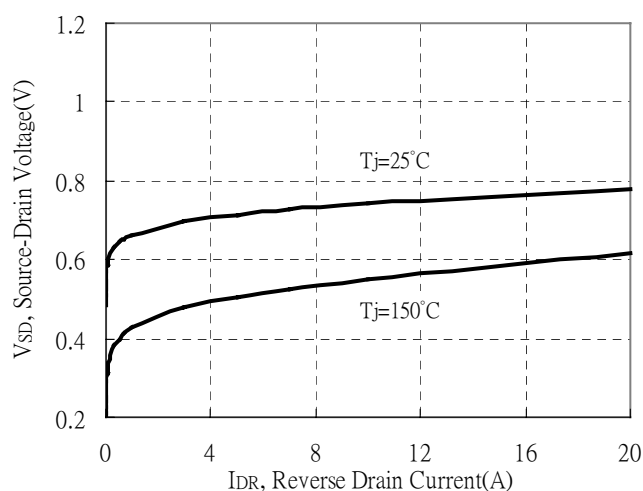
Breakdown Voltage vs Ambient Temperature



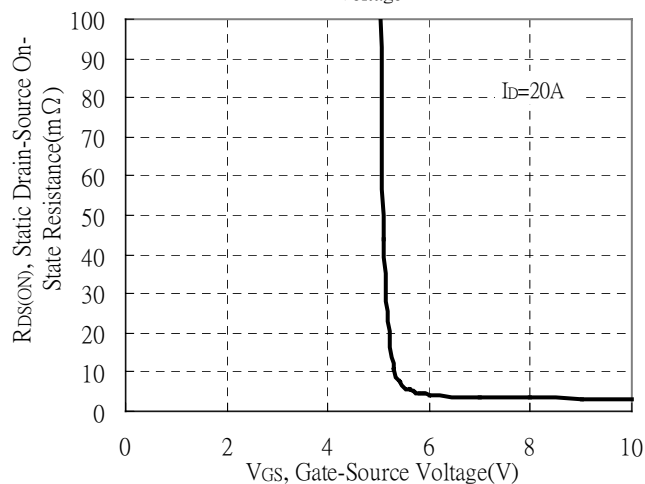
Static Drain-Source On-State resistance vs Drain Current



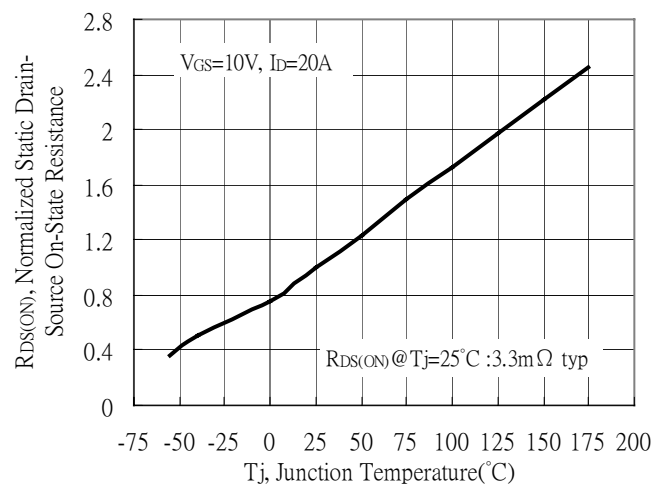
Reverse Drain Current vs Source-Drain Voltage



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

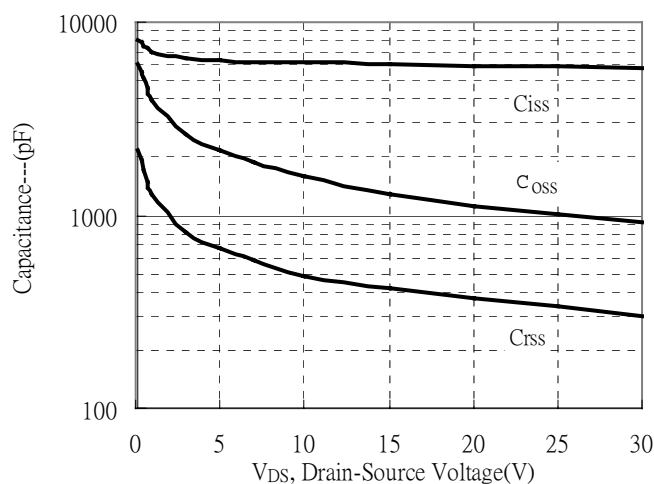


Drain-Source On-State Resistance vs Junction Temperature

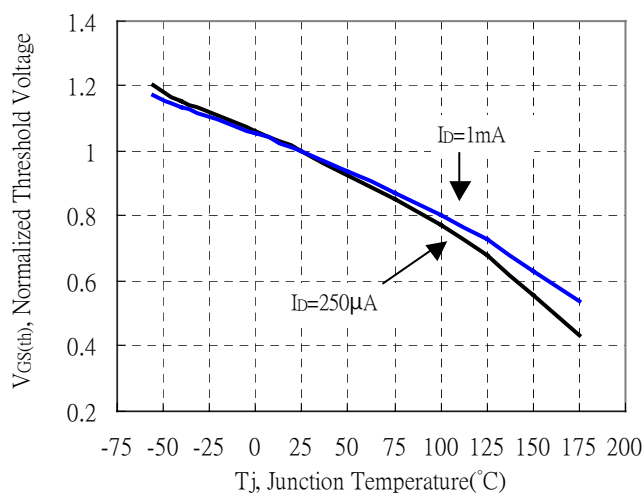


Typical Characteristics(Cont.)

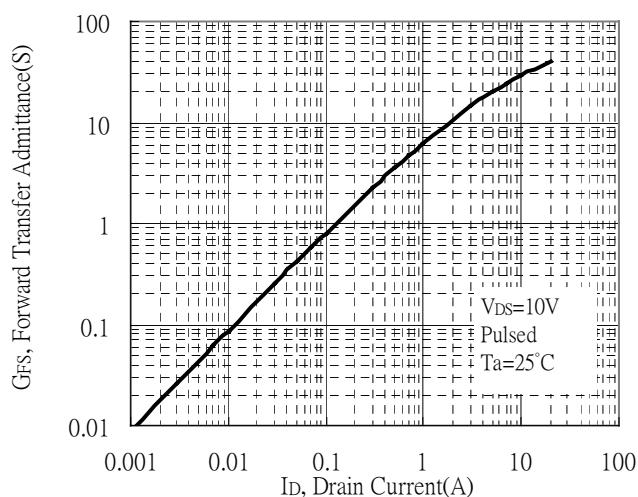
Capacitance vs Drain-to-Source Voltage



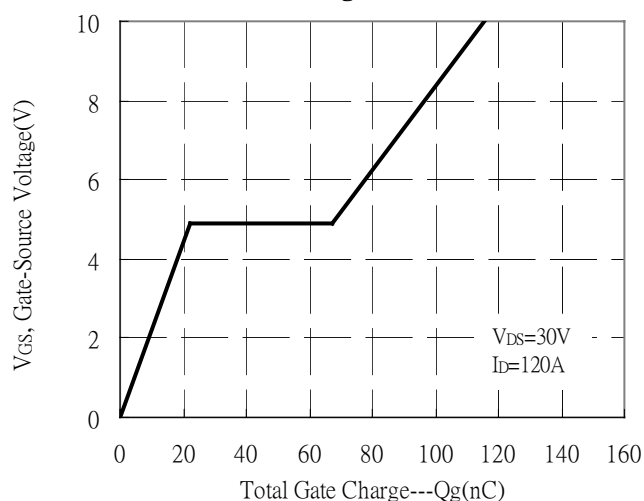
Normalized Threshold Voltage vs Junction Temperature



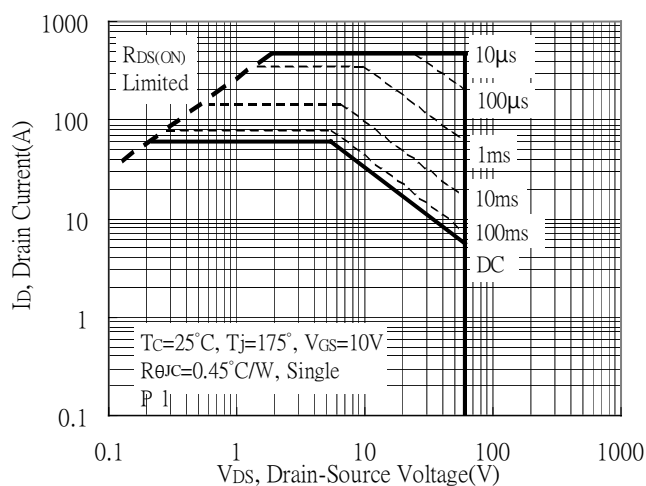
Forward Transfer Admittance vs Drain Current



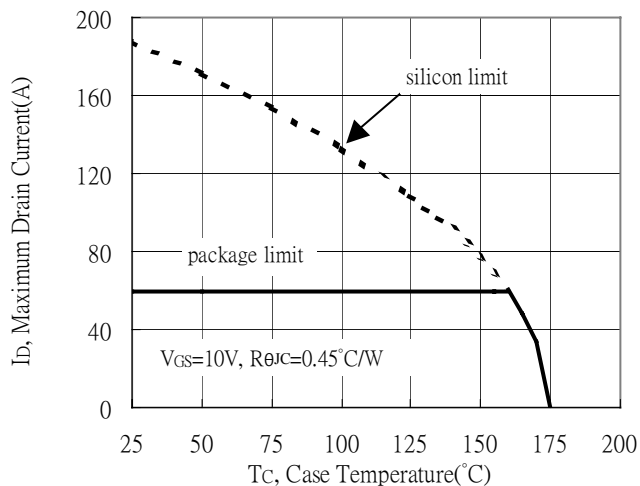
Gate Charge Characteristics



Maximum Safe Operating Area

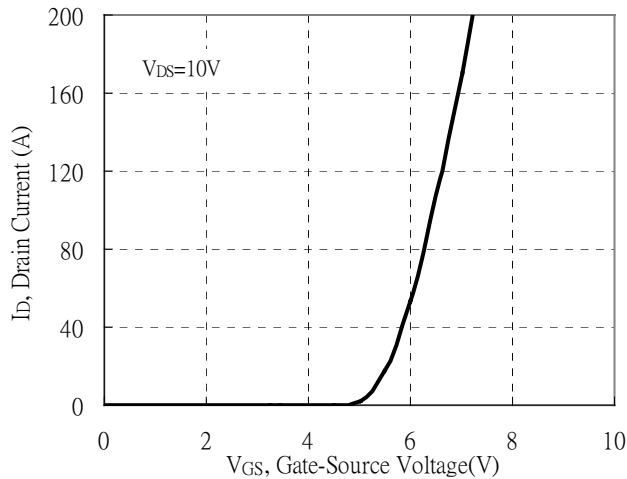


Maximum Drain Current vs Case Temperature

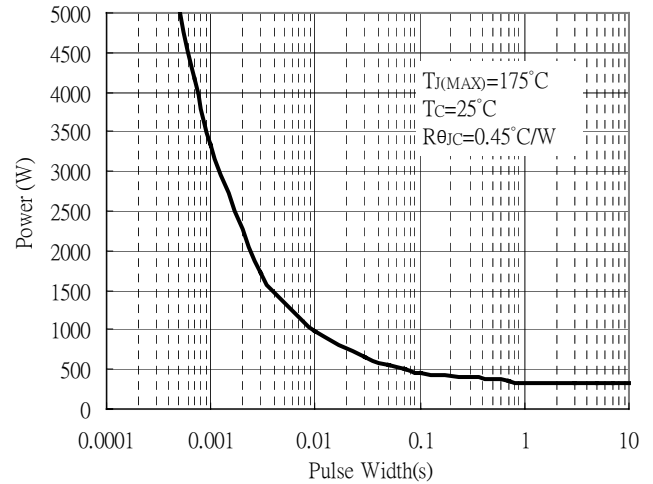


Typical Characteristics(Cont.)

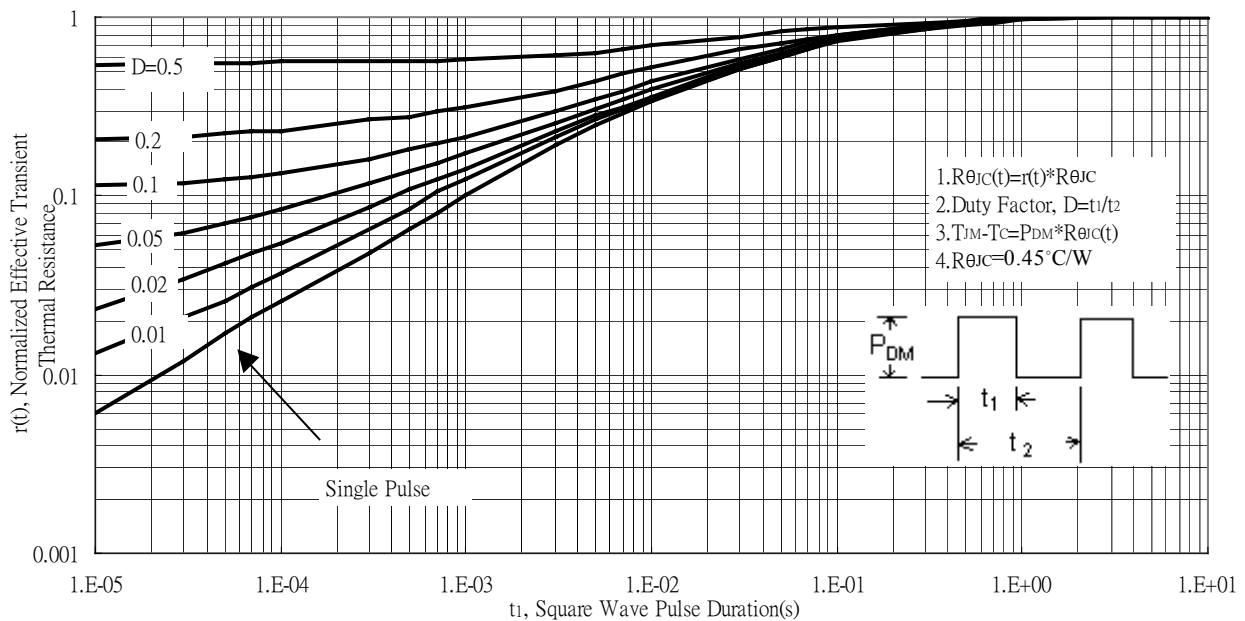
Typical Transfer Characteristics



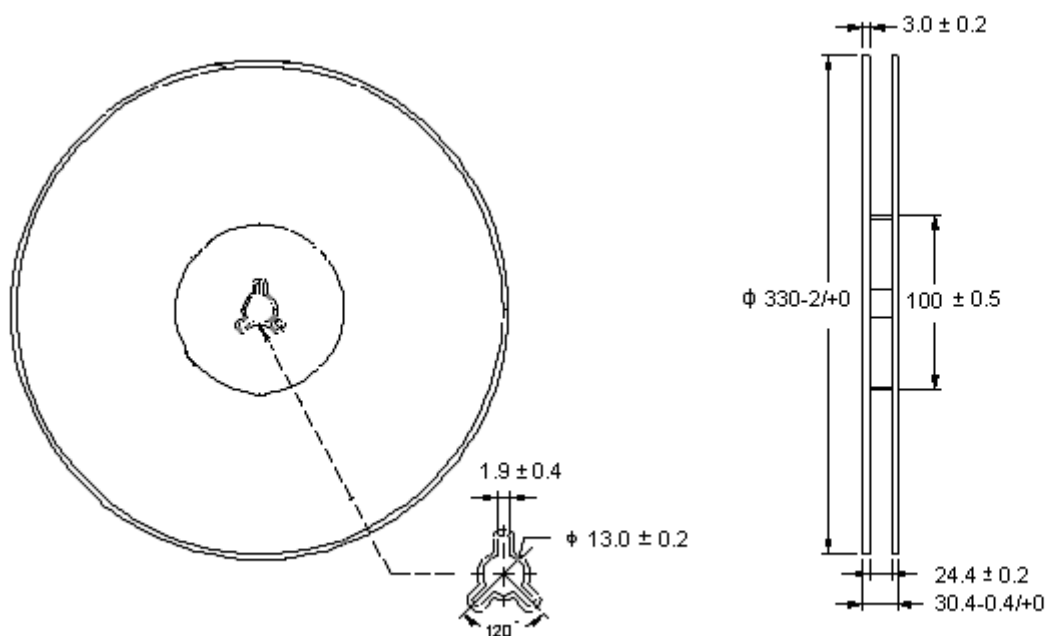
Single Pulse Maximum Power Dissipation



Transient Thermal Response Curves

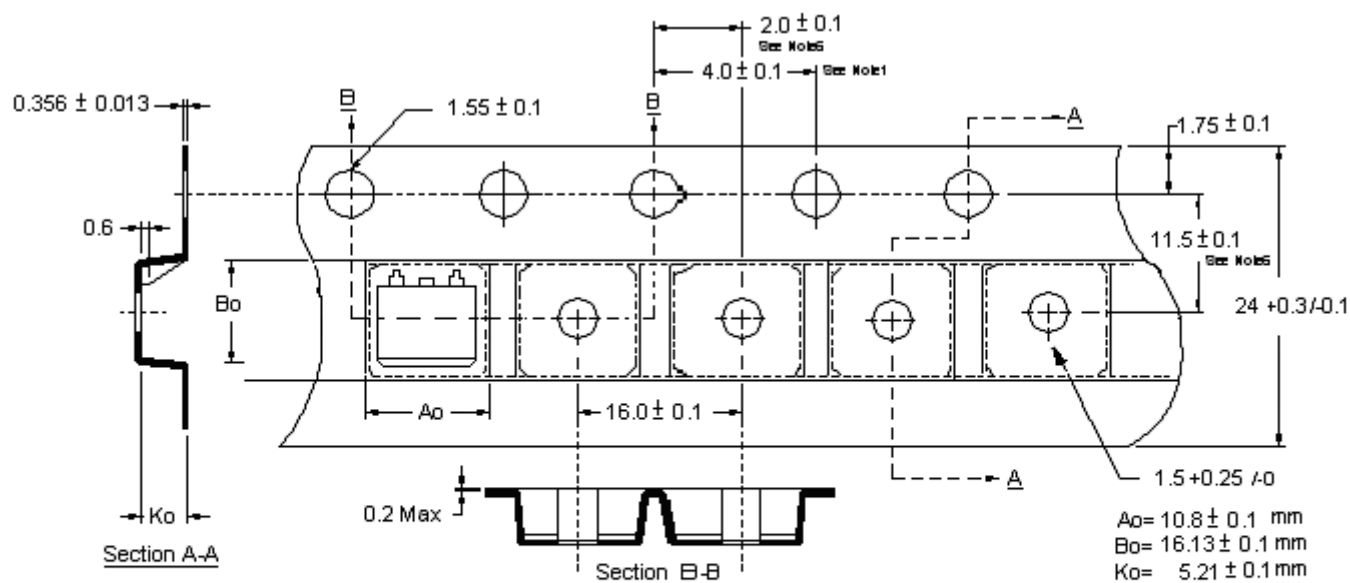


Reel Dimension



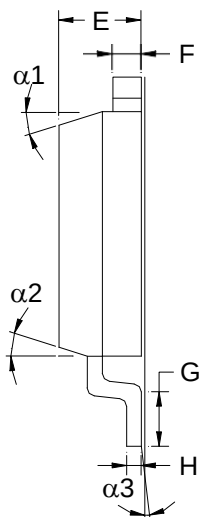
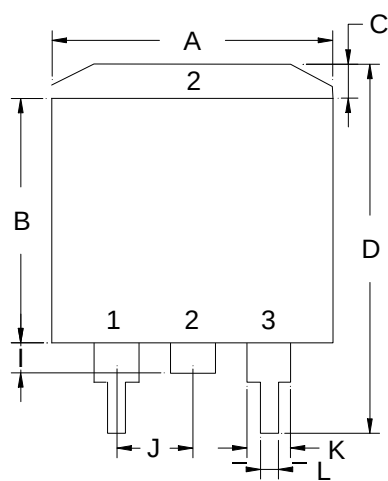
Unit: millimeter

Carrier Tape Dimension

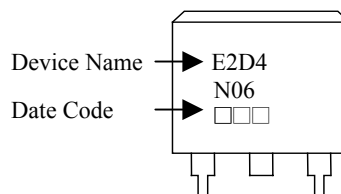


Unit : millimeter

TO-263 Dimension



Marking :



Style : Pin 1.Gate 2.Drain 3.Source

3-Lead Plastic Surface Mounted Package

Date Code : (From left to right)

First Code : Year code, the last digit of Christinr year. For example, 2014→4, 2015→, 2016→6, ..., etc.

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

Third and fourth codes : production serial number, 01~99

*:Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.3800	0.4050	9.65	10.29	I	0.0500	0.0700	1.27	1.78
B	0.3300	0.3700	8.38	9.40	J	-	*0.1000	-	*2.54
C	-	0.0550	-	1.40	K	0.0450	0.0550	1.14	1.40
D	0.5750	0.6250	14.61	15.88	L	0.0200	0.0390	0.51	0.99
E	0.1600	0.1900	4.06	4.83	α1	-	-	6°	8°
F	0.0450	0.0550	1.14	1.40	α2	-	-	6°	8°
G	0.0900	0.1100	2.29	2.79	α3	-	-	0°	5°
H	0.0180	0.0290	0.46	0.74					