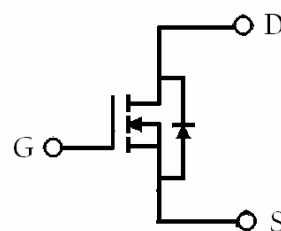
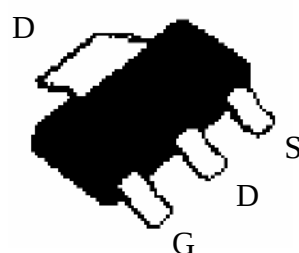


N -Channel Enhancement Mode Power MOSFET

Features:

- Low Gate Charge
- Simple Drive Requirement
- RoHS compliant & Halogen-free package

SOT-223



G : Gate D : Drain
S : Source

BV_{DSS}	60V
I_D	5.9A
$R_{DS(on)}@V_{GS}=10V, I_D=5A$	41m Ω (typ)
$R_{DS(on)}@V_{GS}=4.5V, I_D=3A$	46m Ω (typ)

Ordering Information

Device	Package	Shipping
KLB60N06	SOT-223 (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}	60	V
Gate-Source Voltage	V _{GS}	±20	
Continuous Drain Current @ T _A =25°C, V _{GS} =10V	I _D	5.9	A
Continuous Drain Current @ T _A =100°C, V _{GS} =10V		3.7	
Pulsed Drain Current *1	I _{DM}	30	
Total Power Dissipation *2	Pd	2.7	W
		1.1	
Operating Junction and Storage Temperature Range	T _j , T _{stg}	-55~+150	°C

Note : *1. Pulse width limited by maximum junction temperature

*2. Surface mounted on a 1 in² pad of 2 oz. copper, t≤10s.

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{th,j-c}	14	°C/W
Thermal Resistance, Junction-to-ambient, max	R _{th,j-a}	45 (Note)	°C/W

Note : Surface mounted on a 1 in² pad of 2 oz. copper, t≤10s; 120 °C/W when mounted on minimum copper pad.

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	60	-	-	V	V _{GS} =0, I _D =250μA
V _{GS(th)}	1.0	1.8	3	V	V _{DS} =V _{GS} , I _D =250μA
G _{FS} *1	-	9	-	S	V _{DS} =5V, I _D =5A
I _{GSS}	-	-	±100	nA	V _{GS} =±20, V _{DS} =0
I _{DSS}	-	-	1	μA	V _{DS} =60V, V _{GS} =0
	-	-	25	μA	V _{DS} =48V, V _{GS} =0, T _j =70°C
R _{DS(ON)} *1	-	41	50	mΩ	V _{GS} =10V, I _D =5A
	-	46	60	mΩ	V _{GS} =4.5V, I _D =3A
Dynamic					
Q _g *1, 2	-	22	-	nC	I _D =5A, V _{DS} =48V, V _{GS} =10V
Q _{gs} *1, 2	-	3.2	-		
Q _{gd} *1, 2	-	7.6	-		
t _{d(ON)} *1, 2	-	6.4	-	ns	V _{DS} =30V, I _D =5A, V _{GS} =10V, R _G =3.3Ω
t _r *1, 2	-	9	-		
t _{d(OFF)} *1, 2	-	30	-		
t _f *1, 2	-	6	-		
C _{iss}	-	1128	-	pF	V _{GS} =0V, V _{DS} =30V, f=1MHz
C _{oss}	-	42	-		
C _{rss}	-	32	-		
R _g	-	2.5	-	Ω	V _{GS} =15mV, V _{DS} =0, f=1MHz

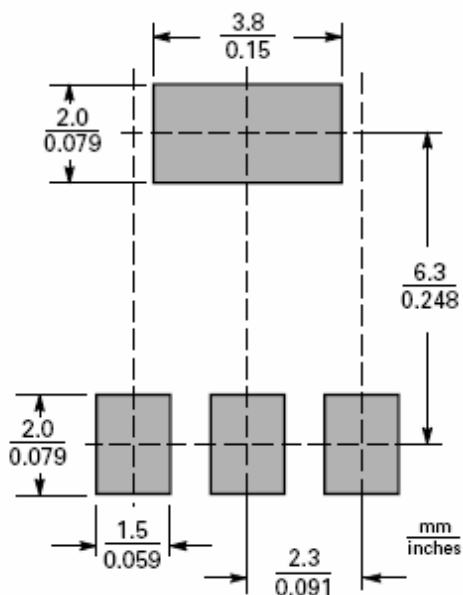
Source-Drain Diode					
I_S *1	-	-	2.3	A	
I_{SM} *3	-	-	9.2		
V_{SD} *1	-	-	1.3	V	$I_F=I_S, V_{GS}=0V$
t_{rr}	-	25	-	ns	$I_F=5A, dI_F/dt=100A/\mu s$
Q_{rr}	-	45	-	nC	

Note : *1.Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

*2.Independent of operating temperature

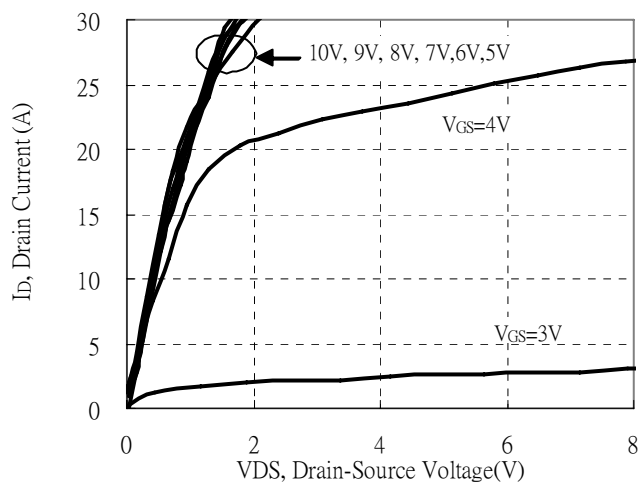
*3.Pulse width limited by maximum junction temperature.

Recommended soldering footprint

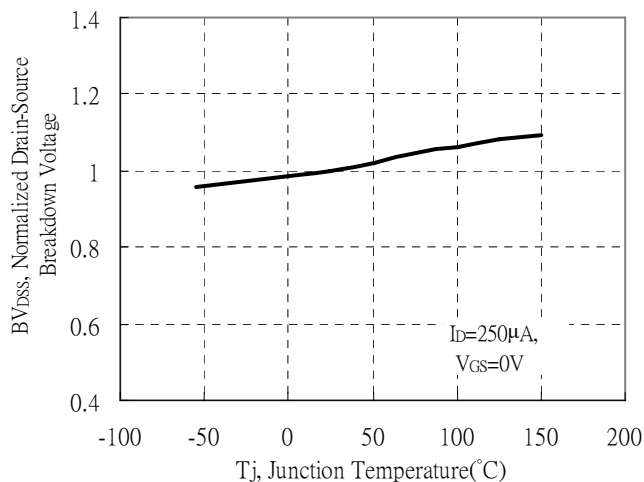


Typical Characteristics

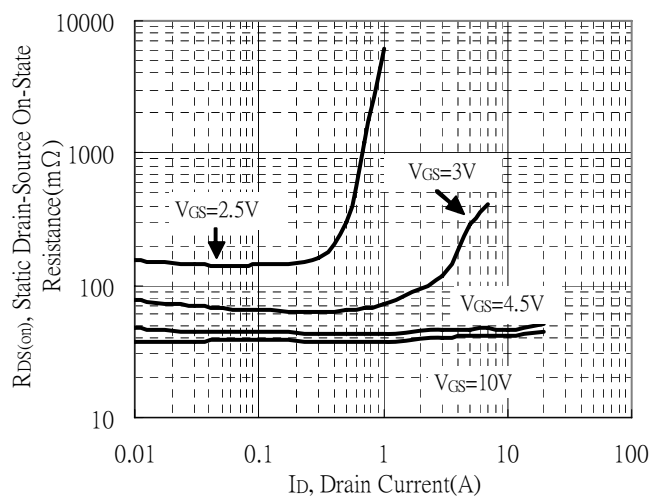
Typical Output Characteristics



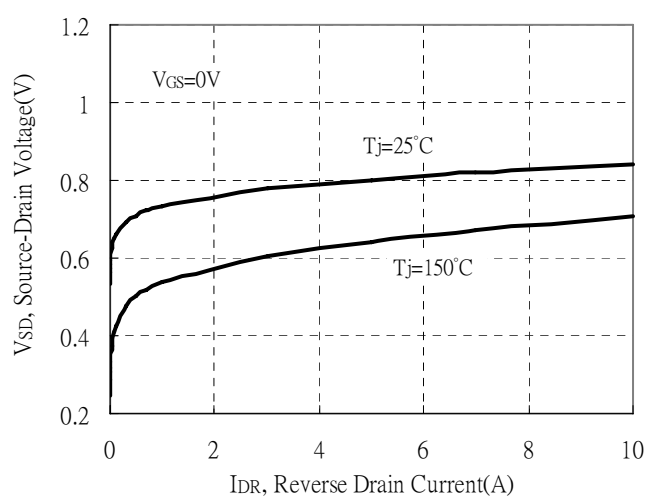
Breakdown Voltage vs Ambient Temperature



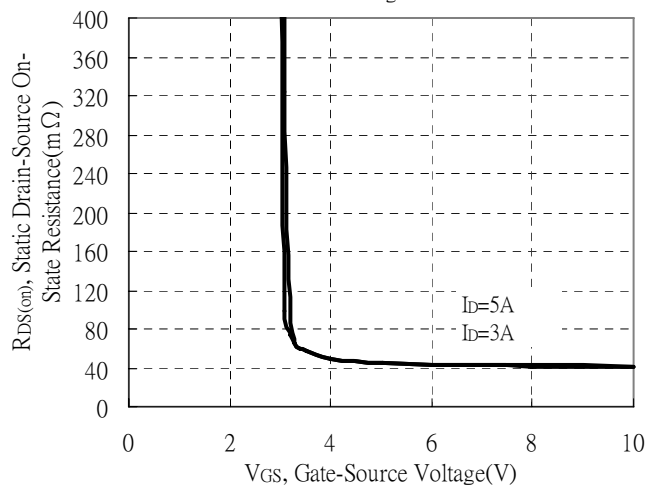
Static Drain-Source On-State resistance vs Drain Current



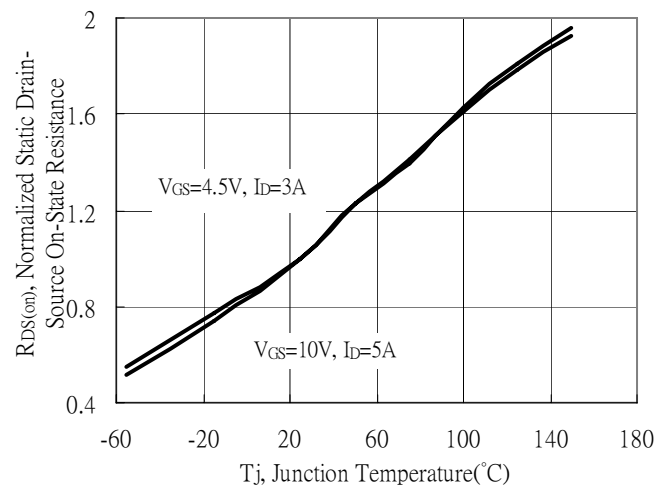
Reverse Drain Current vs Source-Drain Voltage



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

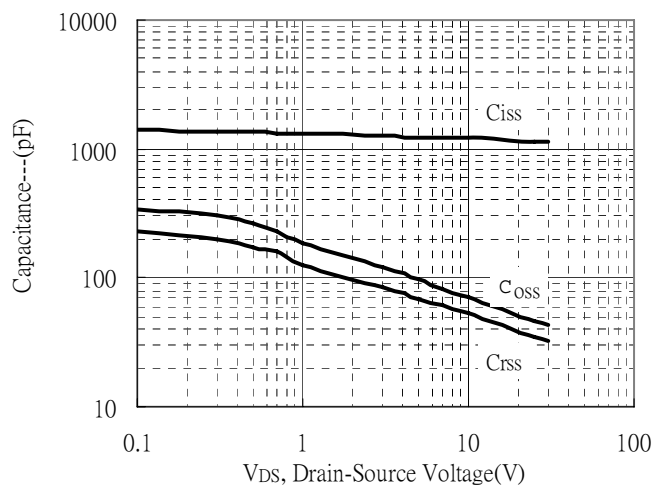


Drain-Source On-State Resistance vs Junction Temperature

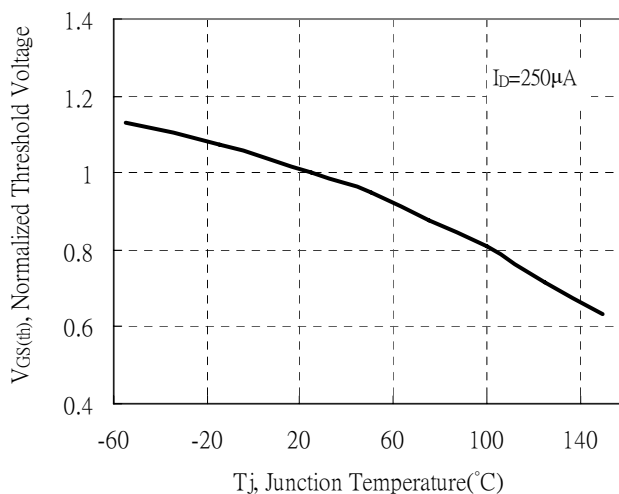


Typical Characteristics(Cont.)

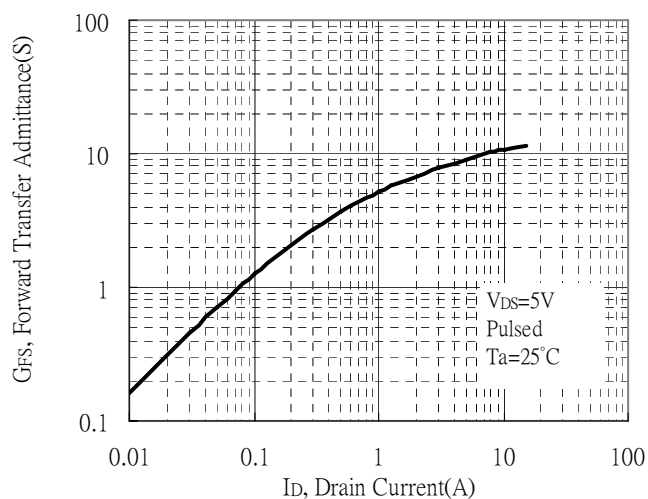
Capacitance vs Drain-to-Source Voltage



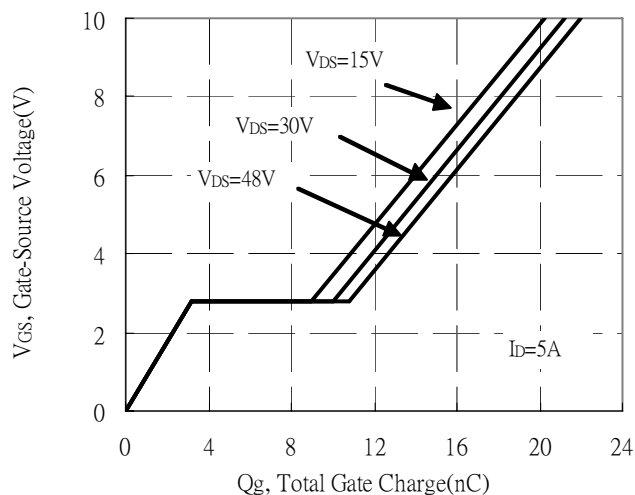
Threshold Voltage vs Junction Temperature



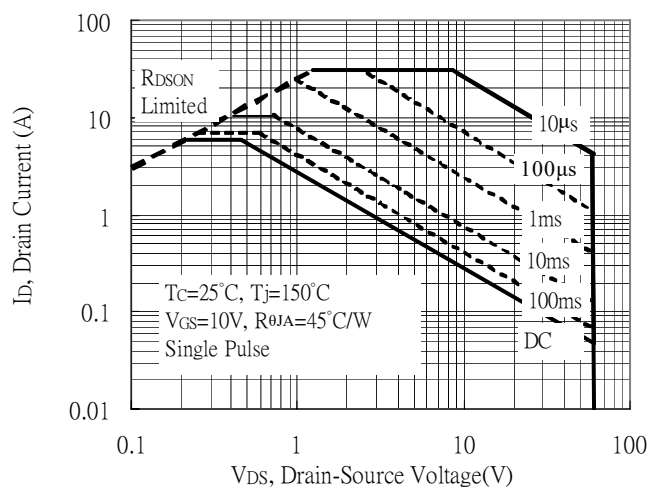
Forward Transfer Admittance vs Drain Current



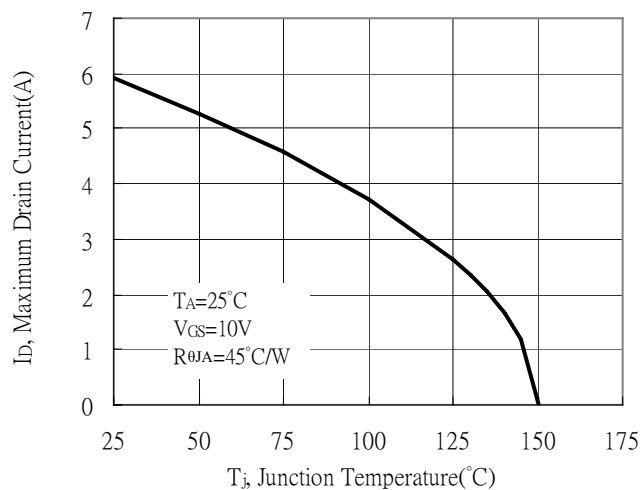
Gate Charge Characteristics



Maximum Safe Operating Area

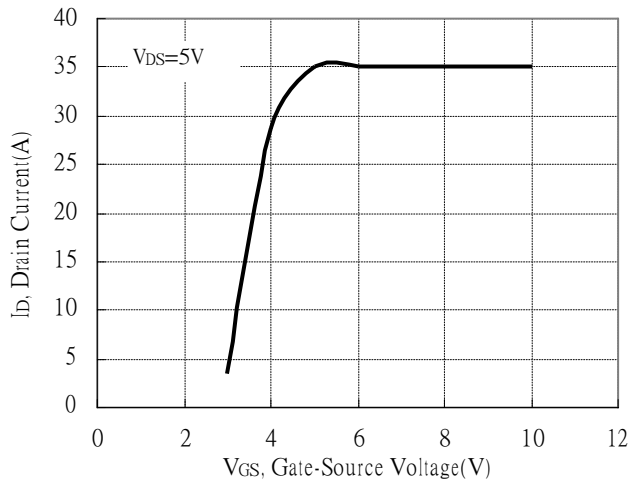


Maximum Drain Current vs Case Temperature

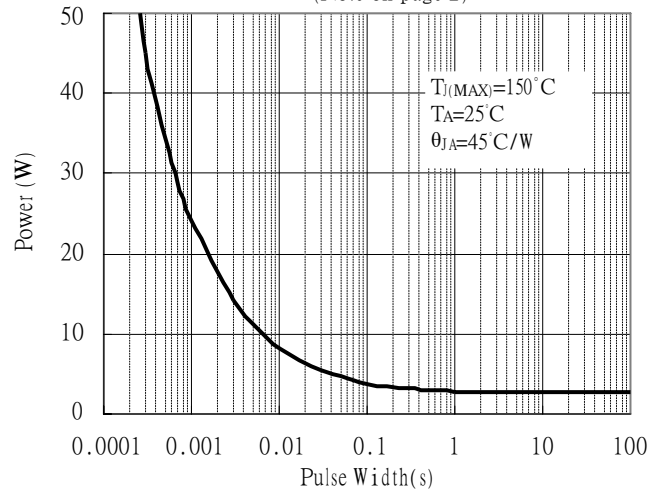


Typical Characteristics(Cont.)

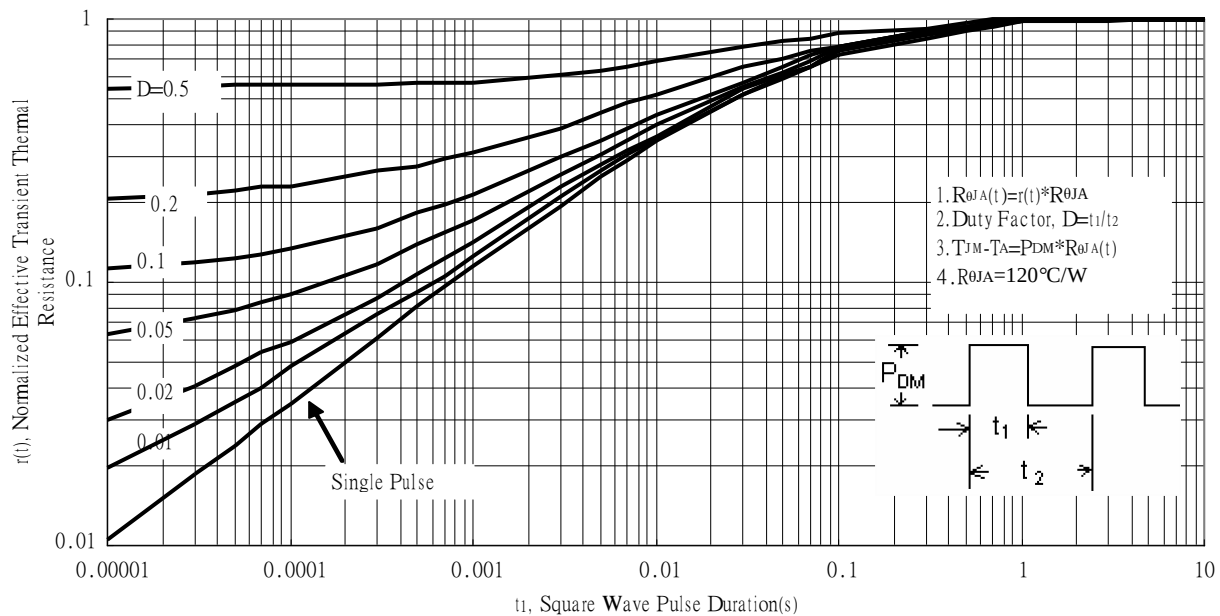
Typical Transfer Characteristics



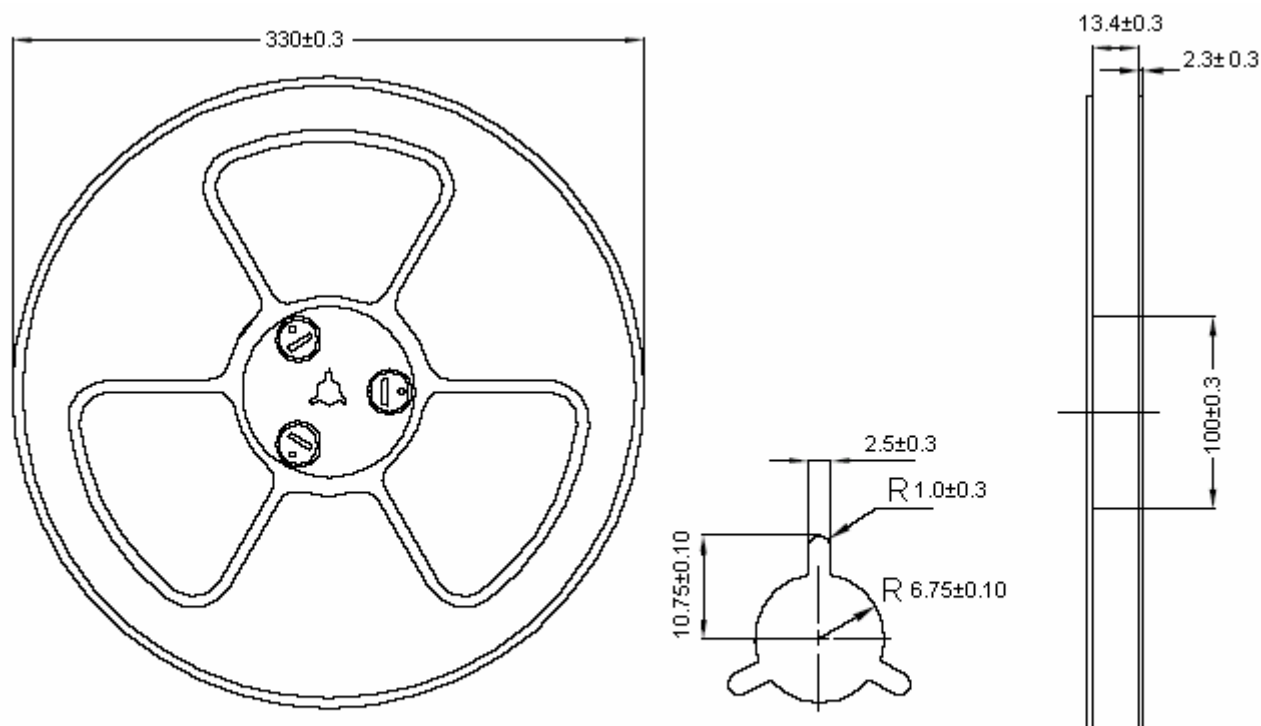
Single Pulse Power Rating, Junction to Ambient
 (Note on page 2)



Transient Thermal Response Curves



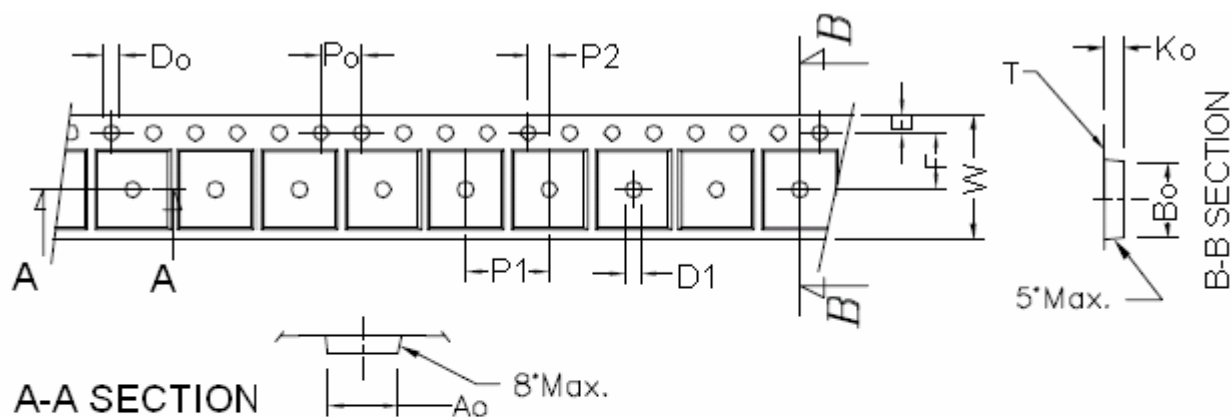
Reel Dimension



UNIT : mm

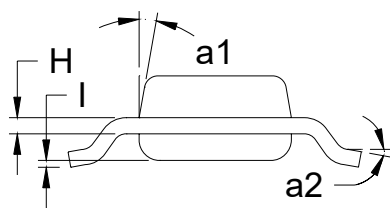
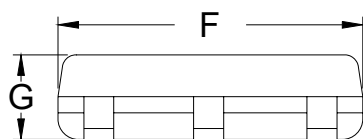
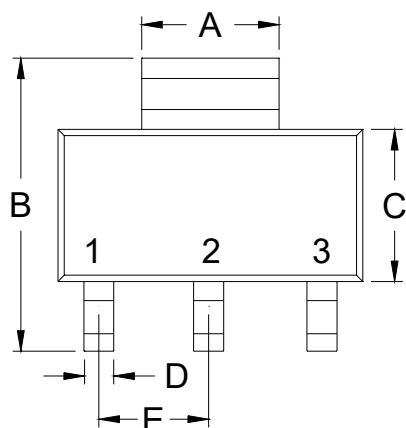
NOTE : 1. Material : Anti-static polystyrene
 2. Surface resistivity $10^9 \Omega/\text{sq}$

Carrier Tape Dimension

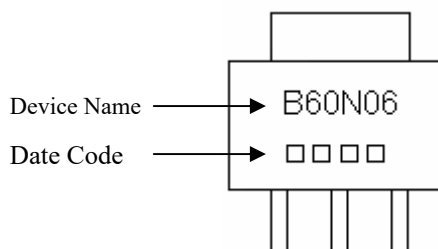


Symbol	A_o	B_o	K_o	P_o	P_1	P_2	T
Spec	6.83 ± 0.1	7.42 ± 0.1	1.88 ± 0.1	4.0 ± 0.1	8.0 ± 0.10	2.0 ± 0.05	0.292 ± 0.02
Symbol	E	F	D_o	D_1	W	$10P_o$	
Spec	1.75 ± 0.1	5.5 ± 0.05	1.60 ± 0.1	1.5 ± 0.25	$12^{+0.3}_{-0.1}$	40.0 ± 0.2	

Unit : mm



Marking:



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

3-Lead SOT-223 Plastic
Surface Mounted Package

*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1142	0.1220	2.90	3.10	G	0.0551	0.0709	1.40	1.80
B	0.2638	0.2874	6.70	7.30	H	0.0098	0.0138	0.25	0.35
C	0.1299	0.1457	3.30	3.70	I	0.0008	0.0039	0.02	0.10
D	0.0236	0.0315	0.60	0.80	a1	*13°	-	*13°	-
E	*0.0906	-	*2.30	-	a2	0°	10°	0°	10°
F	0.2480	0.2638	6.30	6.70					