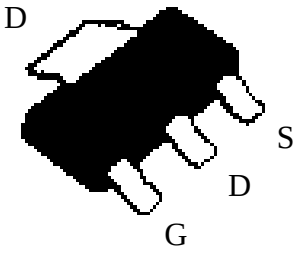
P-Channel Logic Level Enhancement Mode Power MOSFET

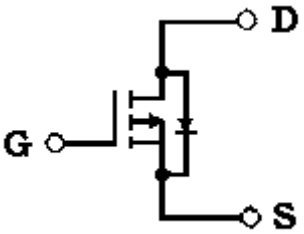
Features:

- Low Gate Charge
- Simple Drive Requirement
- Pb-free lead plating & halogen-free package

SOT-223



BV_{DSS}	-200V
I_D@V_{GS}=-10V, T_A=25°C	-1.2A
R_{DSON}@V_{GS}=-10V, I_D=-1A	0.80Ω (typ)
R_{DSON}@V_{GS}=-6V, I_D=-0.5A	0.85Ω (typ)



G：Gate D：Drain S：Source

Ordering Information

Device	Package	Shipping
KLEJ0P20	SOT-223 (Pb-free lead plating and halogen-free package)	2500 pcs / tape & reel

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

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	-200	V
Gate-Source Voltage	V_{GS}	±30	
Continuous Drain Current @ V_{GS}=-10V, T_C=25°C	I_D	-1.6	A
Continuous Drain Current @ V_{GS}=-10V, T_C=100°C		-1	
Continuous Drain Current @ V_{GS}=-10V, T_A=25°C		-1.2	
Continuous Drain Current @ V_{GS}=-10V, T_A=70°C		-0.96	
Pulsed Drain Current *1	I_{DM}	-6.4	
Avalanche Current	I_{AS}	-1.6	
Avalanche Energy @ L=10mH, I_D=-1.6A, R_G=25Ω	E_{AS}	13	mJ
Repetitive Avalanche Energy @ L=0.05mH *2	E_{AR}	2	
Total Power Dissipation @T_A=25℃	Pd	2.5	W
Total Power Dissipation @T_A=100℃		1	
Operating Junction and Storage Temperature Range	Tj, Tstg	-55~+150	°C

Note : *1. Pulse width limited by maximum junction temperature
*2. Duty cycle ≤ 1%

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	25	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	50 (Note)	

Note : Surface mounted on a 1 in^2 pad of 2 oz. copper, t≤10s; 110 °C/W when mounted on minimum copper pad.

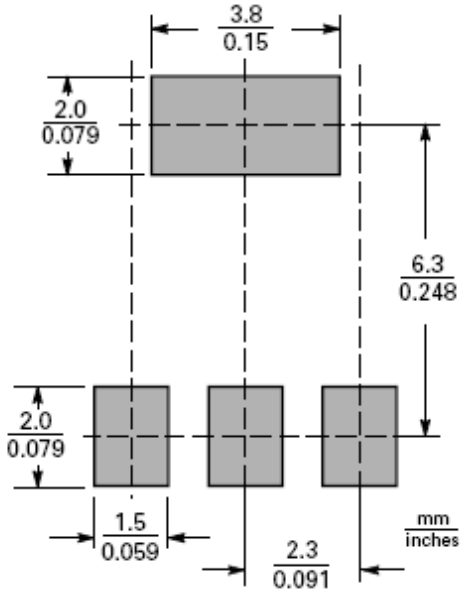
Characteristics (Tc=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	-200	-	-	V	V_{GS}=0V, I_D=-250μA
$V_{GS(th)}$	-2	-	-4		V_{DS} =V_{GS}, I_D=-250μA
I_{GSS}	-	-	±100	nA	V_{GS}=±30, V_{DS}=0V
I_{DSS}	-	-	-1	μA	V_{DS} =-160V, V_{GS} =0V
	-	-	-25		V_{DS} =-160V, V_{GS} =0V, T_J=125°C
$R_{DS(ON)}$ *1	-	0.80	1.0	Ω	V_{GS} =-10V, I_D=-1A
	-	0.85	1.1		V_{GS} =-6V, I_D=-0.5A
G_{FS} *1	-	2	-	S	V_{DS} =-5V, I_D=-0.5A
Dynamic					
Qg *1, 2	-	14	-	nC	I_D=-1A, V_{DS}=-160V, V_{GS}=-10V
Qgs *1, 2	-	4	-		
Qgd *1, 2	-	4.8	-		
$t_{d(ON)}$ *1, 2	-	8	-	ns	V_{DS}=-100V, I_D=-1A, V_{GS}=-10V, R_G=6Ω
tr *1, 2	-	4	-		
$t_{d(OFF)}$ *1, 2	-	22	-		
t_f *1, 2	-	6	-		

Ciss	-	812	-	pF	V_{GS}=0V, V_{DS}=-25V, f=1MHz
Coss	-	37	-		
Crss	-	18	-		
Source-Drain Diode					
I_S *1	-	-	-1.6	A	
I_{SM} *3	-	-	-6.4		
V_{SD} *1	-	-0.8	-1.2	V	I_S=-1A, V_{GS}=0V
trr	-	80	-	ns	I_F=-1A, dI_F/dt=100A/μs
Qrr	-	100	-	nC	

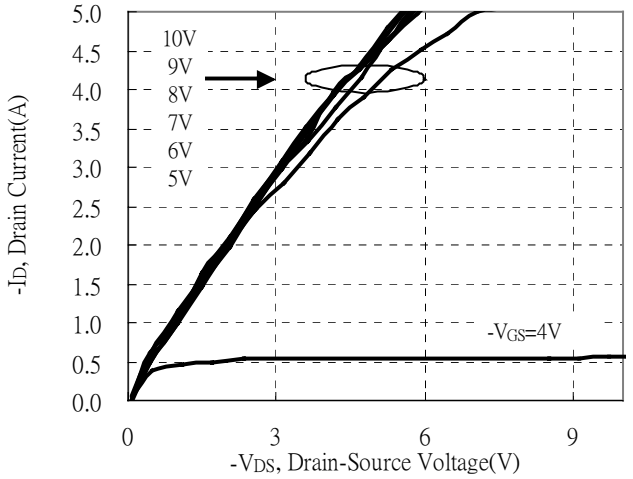
Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%
*2.Independent of operating temperature
*3.Pulse width limited by maximum junction temperature.

Recommended soldering footprint

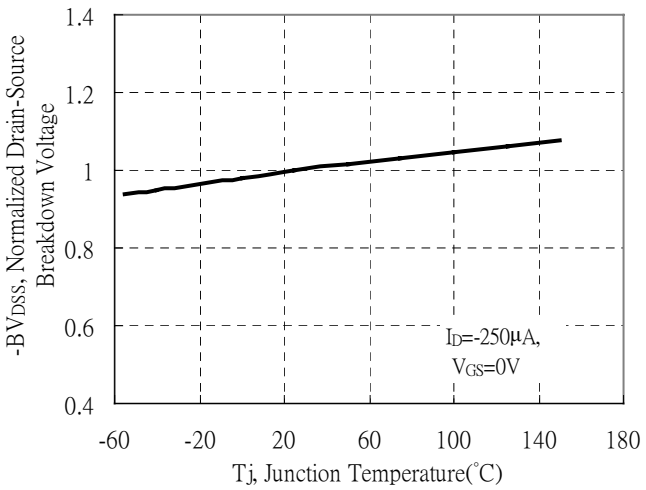


Typical Characteristics

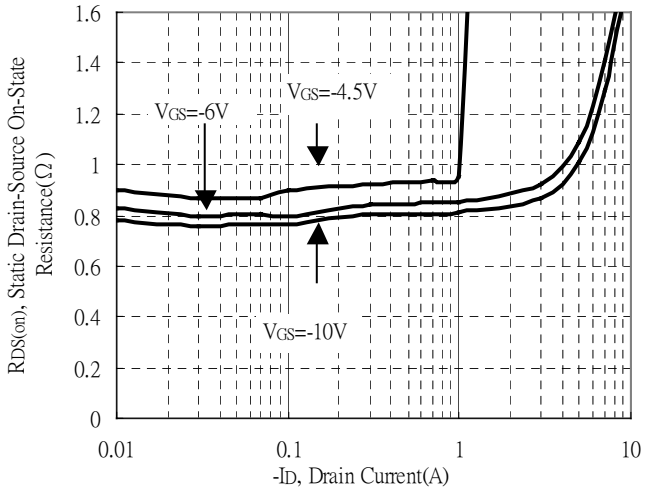
Typical Output Characteristics



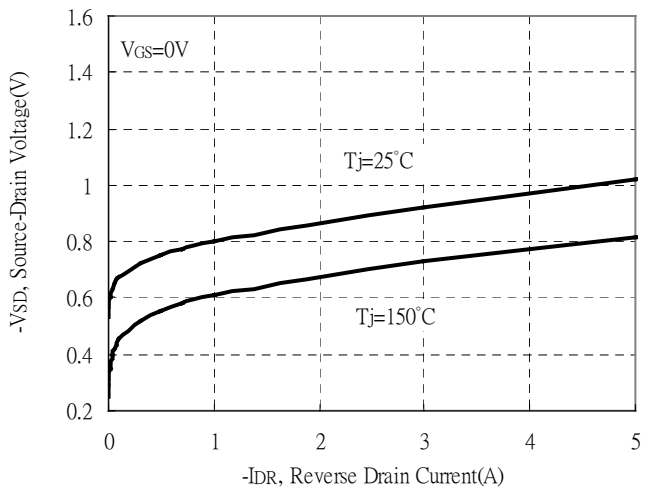
Brekdown Voltage vs Ambient Temperature



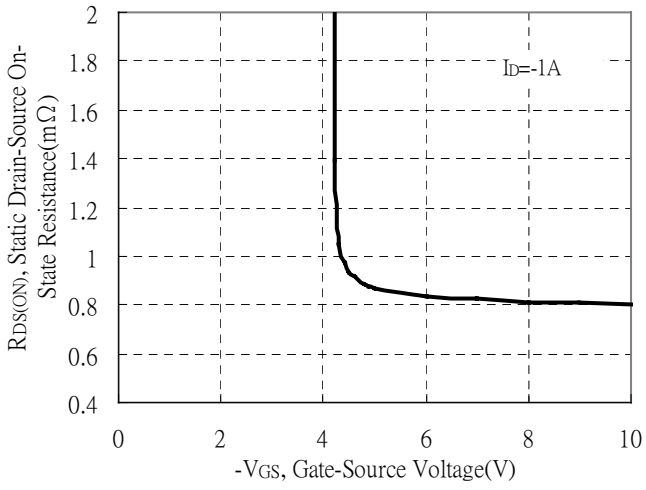
Static Drain-Source On-State resistance vs Drain Current



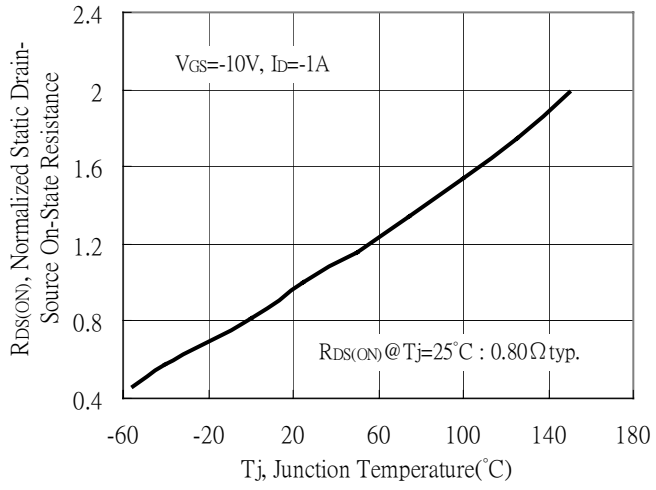
Reverse Drain Current vs Source-Drain Voltage



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

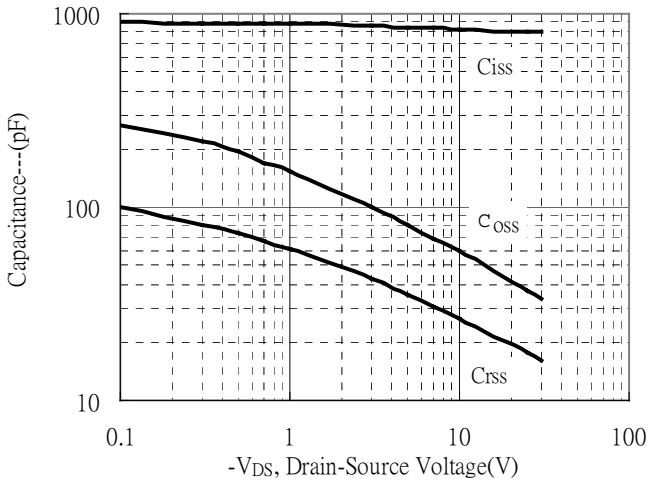


Drain-Source On-State Resistance vs Junction Tempearture

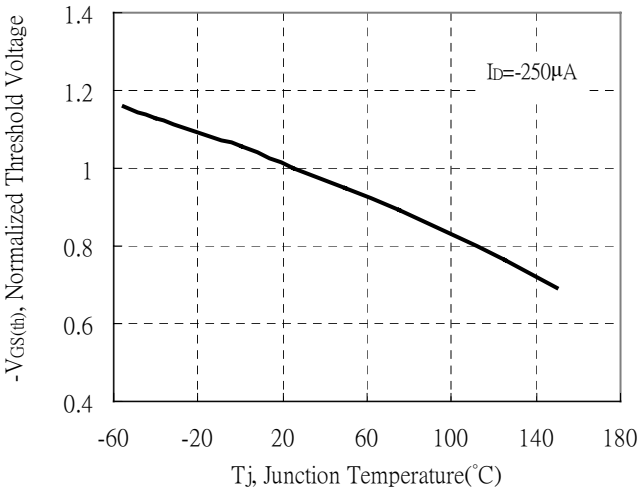


Typical Characteristics(Cont.)

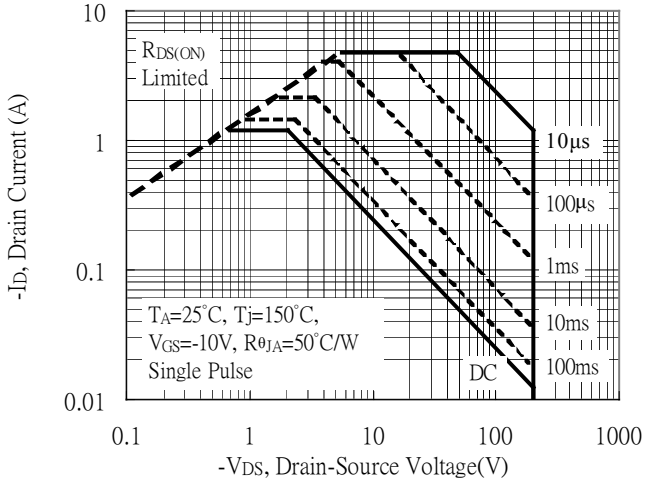
Capacitance vs Drain-to-Source Voltage



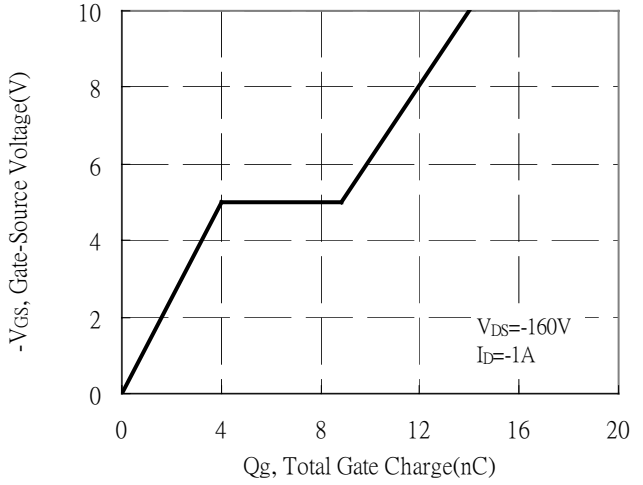
Threshold Voltage vs Junction Tempearture



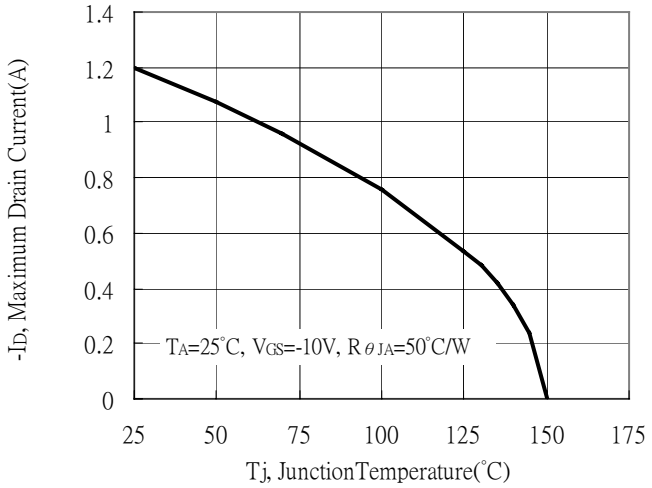
Maximum Safe Operating Area



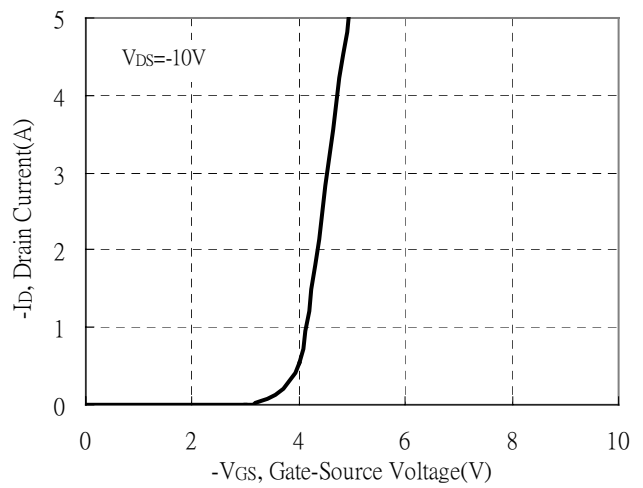
Gate Charge Characteristics



Maximum Drain Current vs Junction Temperature

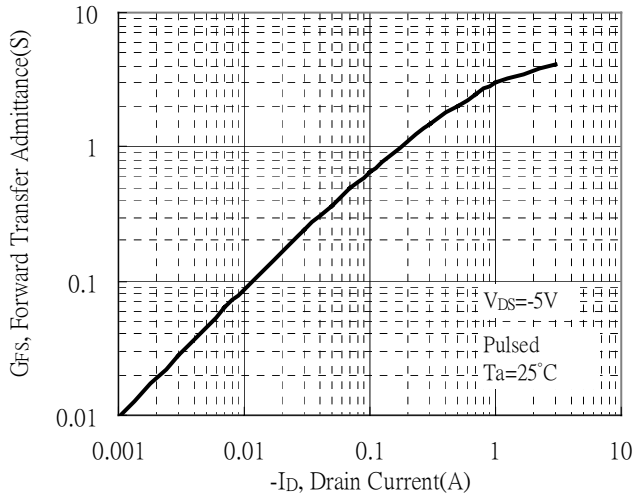


Typical Transfer Characteristics

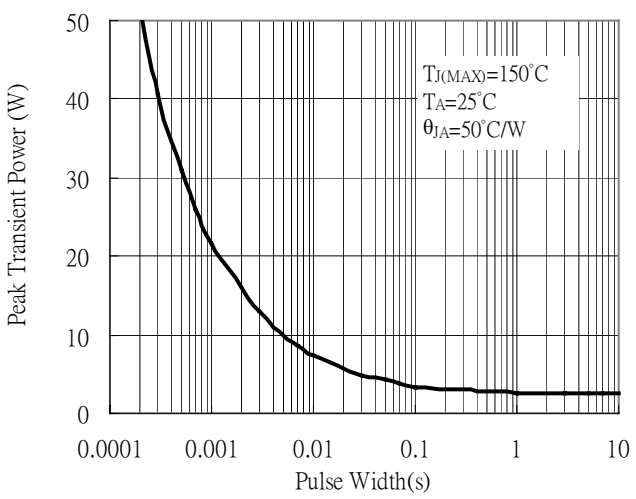


Typical Characteristics(Cont.)

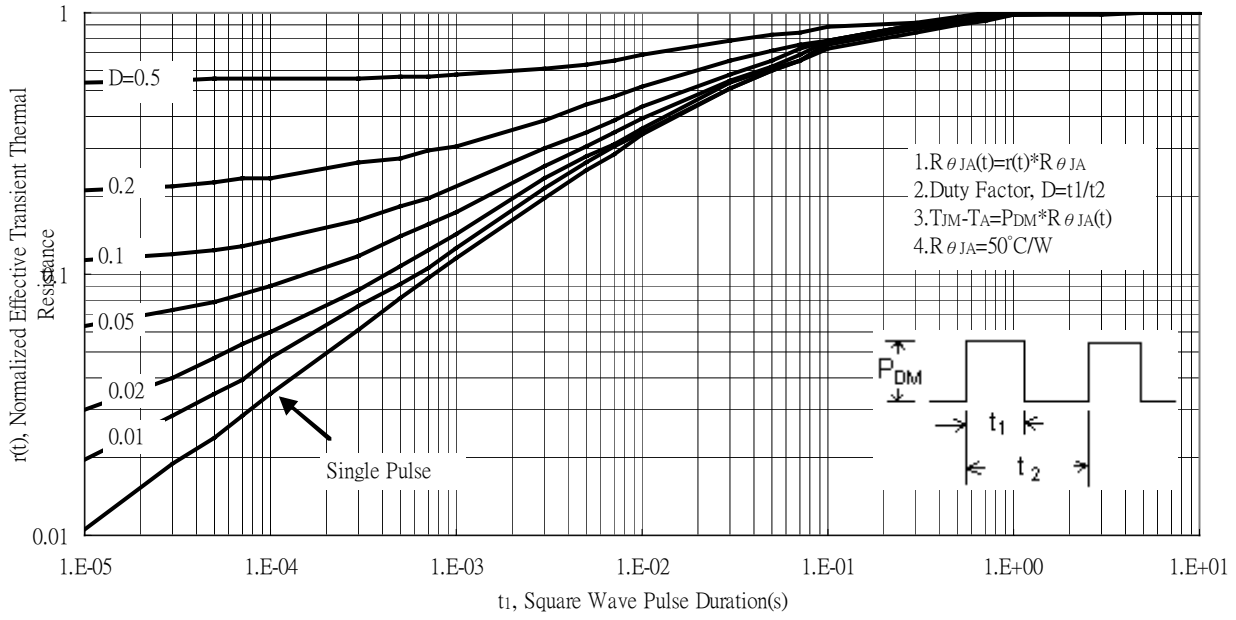
Forward Transfer Admittance vs Drain Current



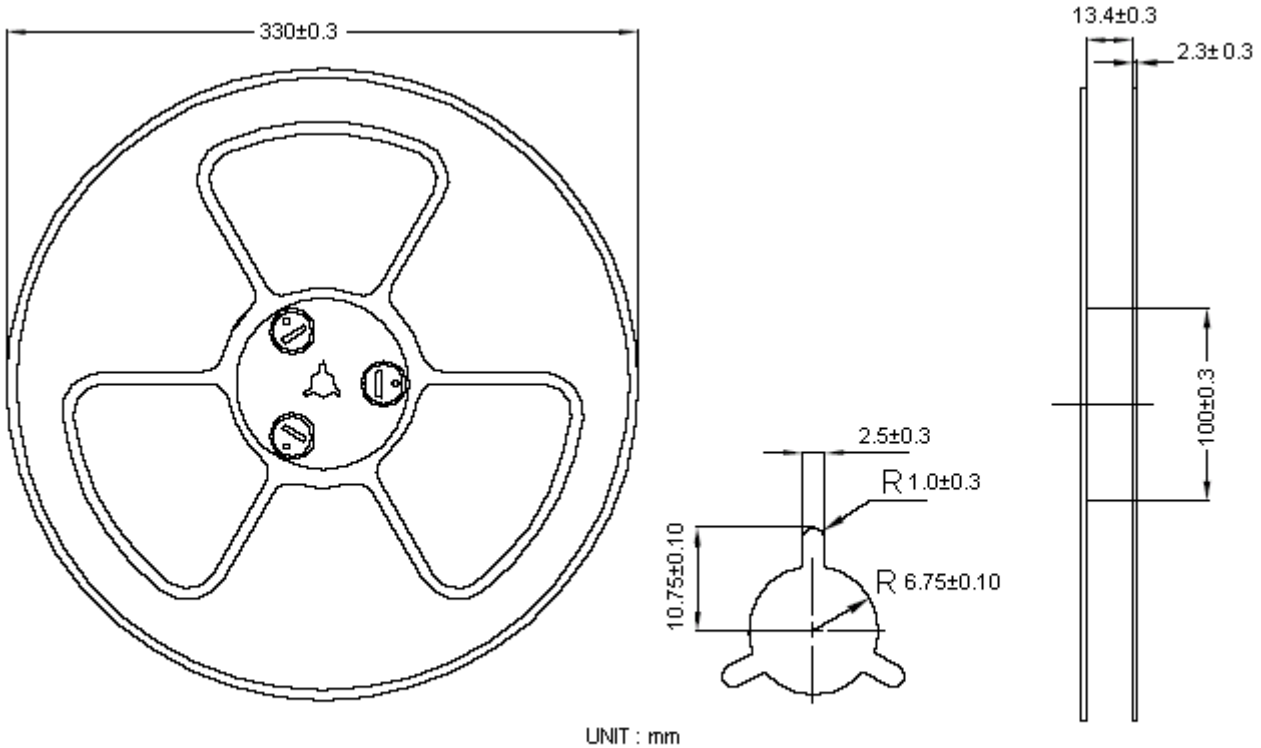
Single Pulse Maximum Power Dissipation



Transient Thermal Response Curves



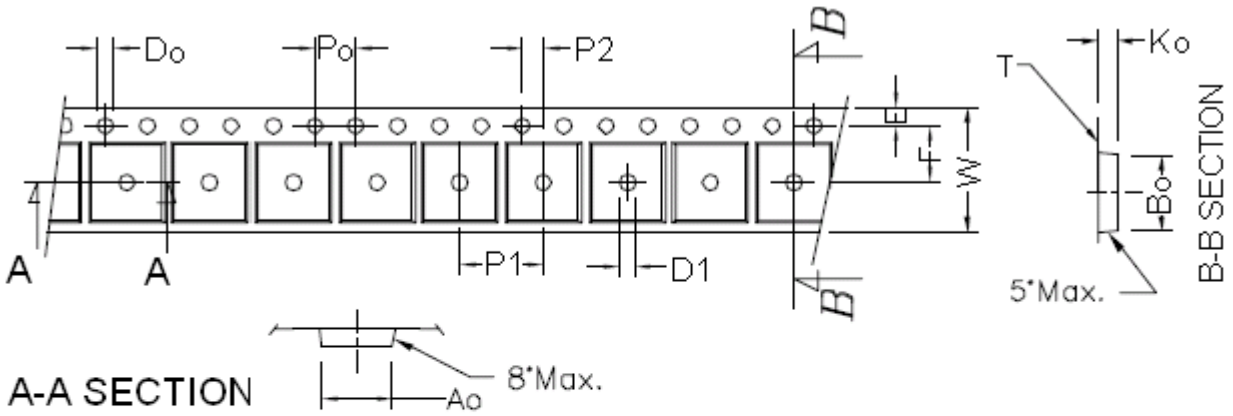
Reel Dimension



UNIT : mm

NOTE : 1. Material : Anti-static polystyrene
2. Surface resistivity 10^9 Ω/sq

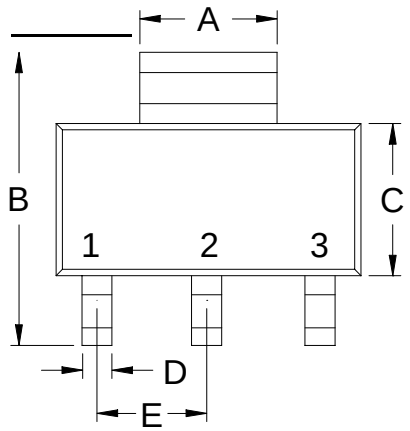
Carrier Tape Dimension



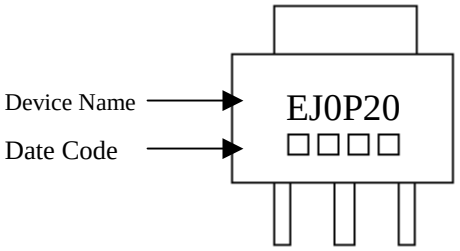
Symbol	Ao	Bo	Ko	Po	P1	P2	T
Spec	6.83±0.1	7.42±0.1	1.88±0.1	4.0±0.1	8.0±0.10	2.0±0.05	0.292±0.02
Symbol	E	F	Do	D1	W	10Po	
Spec	1.75±0.1	5.5±0.05	1.60±0.1	1.5±0.25	$12^{+0.3}_{-0.1}$	40.0±0.2	

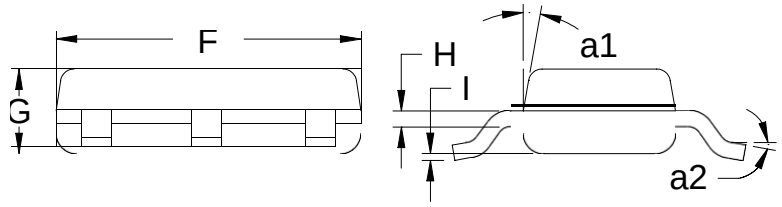
Unit : mm

SOT-223 Dimension



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	0.23	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					