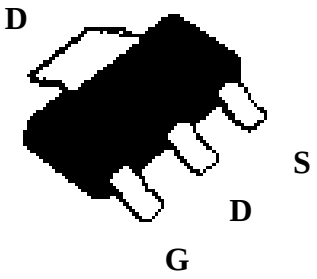
P-Channel Enhancement Mode Power MOSFET

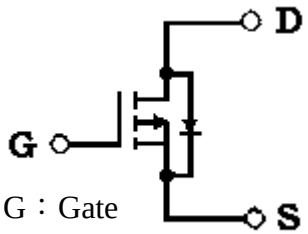
Features:

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

SOT-223



BV_{DSS}	**-100V**
I_D@V_{GS}=-10V, T_A=25˚C	**-3.8A**
I_D@V_{GS}=-10V, T_C=25˚C	**-10.8A**
R_{DSON}@V_{GS}=-10V, I_D=-4.5A	**85mΩ (typ.)**
R_{DSON}@V_{GS}=-4.5V, I_D=-4A	**96mΩ (typ.)**



G：Gate
D：Drain
S：Source

Ordering Information

Device	Package	Shipping
KLB110P10	SOT-223 (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}	-100	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current @ T_C=25°C	I_D	-10.8	A
Continuous Drain Current @ T_C=100°C		-6.8	
Continuous Drain Current @ T_A=25°C	I_{DSM}	-3.8 *2	
Continuous Drain Current @ T_A=70°C		-3.0 *2	
Pulsed Drain Current	I_{DM}	-20 *1	
Avalanche Current	I_{AS}	-30	
Avalanche Energy @ L=0.1mH, I_D=-30A, V_{DD}=-25V	E_{AS}	45 *1	mJ
Total Power Dissipation (T_A=25℃)	P_{DSM}	3.1 *2	W
Linear Derating Factor		0.02	W/°C
Operating Junction and Storage Temperature	Tj, Tstg	-55~+150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	5	°C/W
Thermal Resistance, Junction-to-ambient, max	$R_{th,j-a}$	40 *2	

Note : *1. Pulse width limited by maximum junction temperature
*2. Surface mounted on 1 in^2 copper pad of FR-4 board; 120°C/W when mounted on minimum copper pad

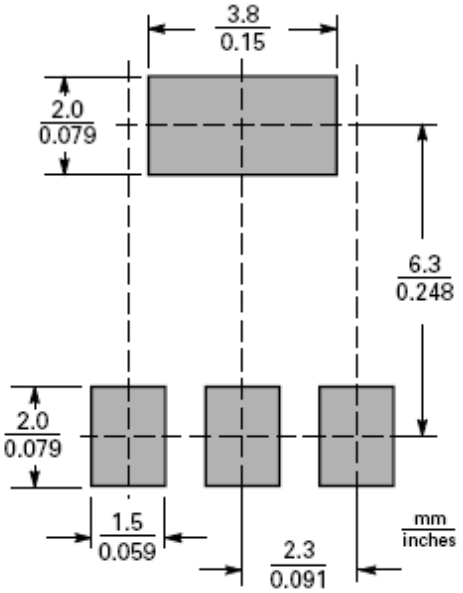
Characteristics (Tj=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	-100	-	-	V	V_{GS}=0V, I_D=-250μA
$\Delta BV_{DSS}/\Delta Tj$	-	-0.08	-	V/°C	Reference to 25°C, I_D=-250μA
$V_{GS(th)}$	-1.0	-	-2.5	V	V_{DS} = V_{GS}, I_D=-250μA
G_{FS}	-	10	-	S	V_{DS} =-10V, I_D=-4A
I_{GSS}	-	-	±100	nA	V_{GS}=±20V, V_{DS}=0V
I_{DSS}	-	-	-1	μA	V_{DS} =-80V, V_{GS} =0V
I_{DSS}	-	-	-25		V_{DS} =-80V, V_{GS} =0V, Tj=70°C
*$R_{DS(ON)}$	-	85	115	mΩ	V_{GS} =-10V, I_D=-4.5A
	-	96	130		V_{GS} =-4.5V, I_D=-4A
Dynamic					
*Qg	-	30	-	nC	V_{DS}=-80V, I_D=-3.8A, V_{GS}=-10V
*Qgs	-	3.7	-		
*Qgd	-	7.2	-		
*$t_{d(ON)}$	-	8.8	-	ns	V_{DS}=-50V, I_D=-1A,V_{GS}=-10V, R_G=3.3Ω
*tr	-	17.6	-		
*$t_{d(OFF)}$	-	69.8	-		
*t_f	-	67.6	-		

Ciss	-	1421	-	pF	V_{GS}=0V, V_{DS}=-25V, f=1MHz
Coss	-	120	-		
Crss	-	68	-		
Source-Drain Diode					
*V_{SD}	-	-0.75	-1.2	V	I_S=-2A, V_{GS}=0V
*trr	-	22	-	ns	I_F=-3.8A, V_{GS}=0V, dI_F/dt=100A/μs
*Qrr	-	23	-	nC	

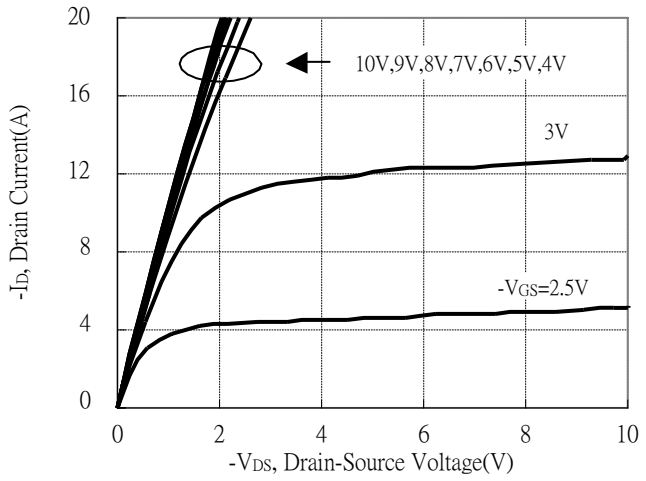
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Recommended soldering footprint

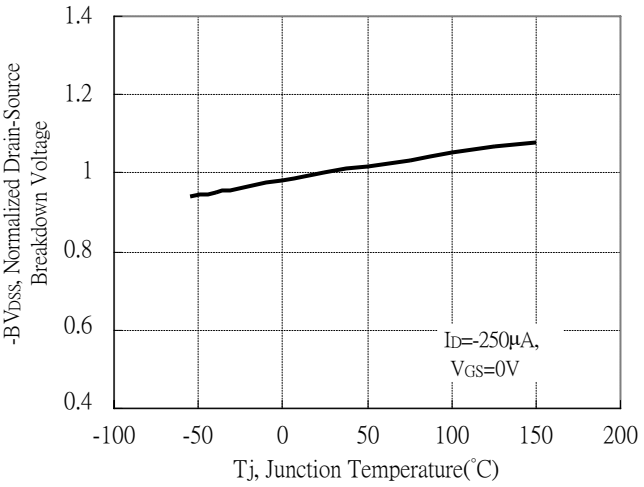


Typical Characteristics

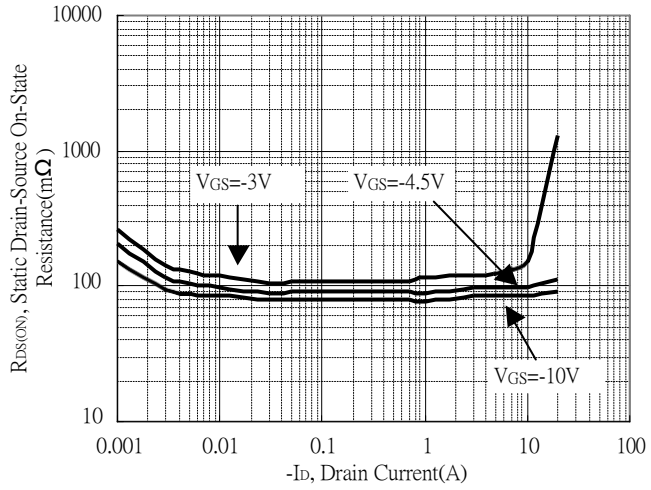
Typical Output Characteristics



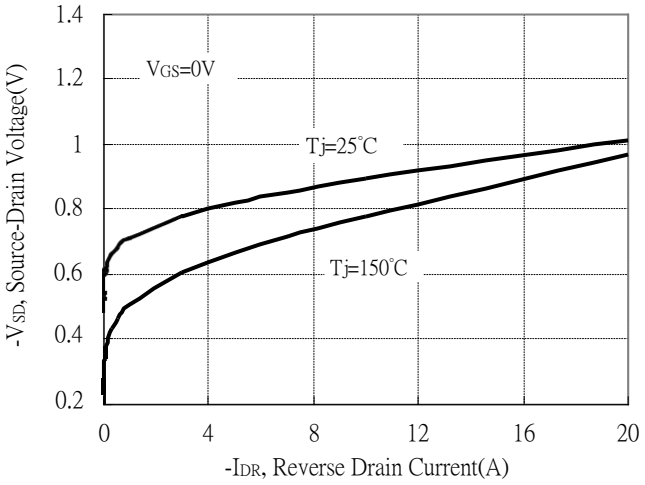
Brekdown Voltage vs Ambient Temperature



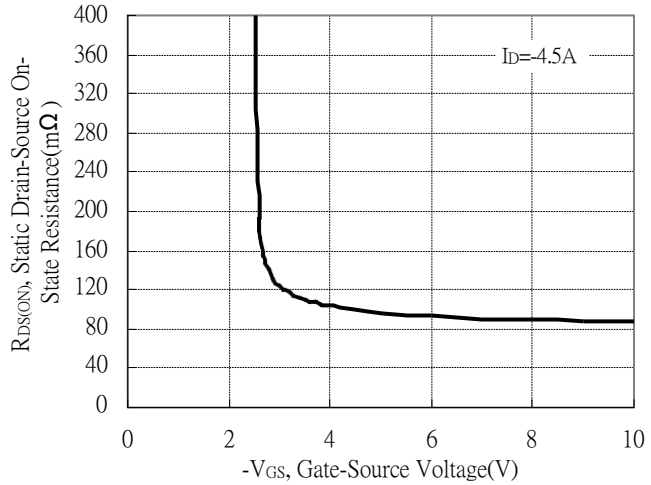
Static Drain-Source On-State resistance vs Drain Current



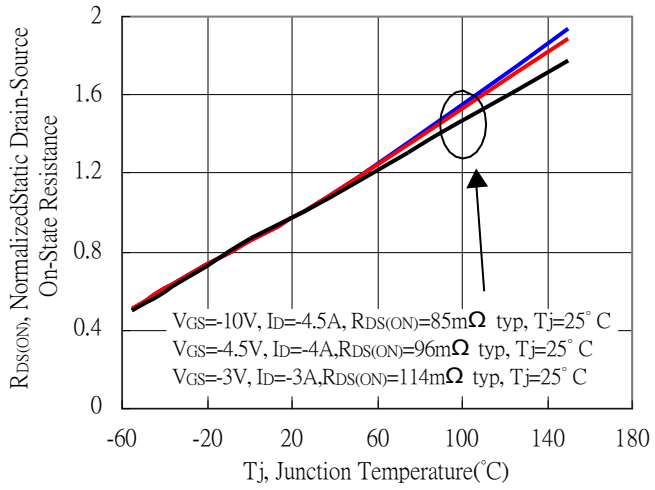
Reverse Drain Current vs Source-Drain Voltage



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

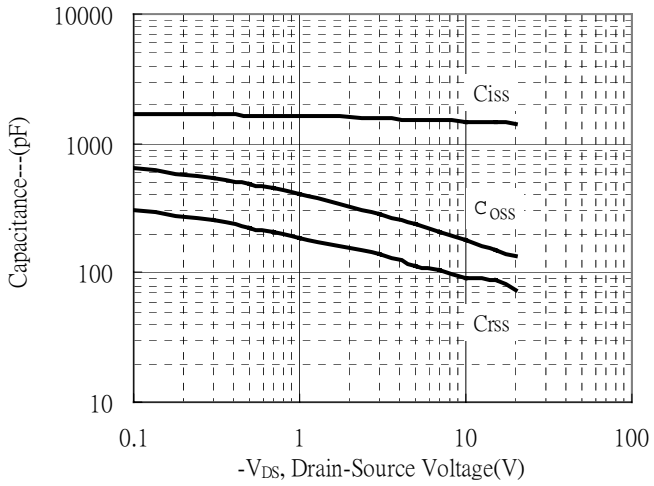


Drain-Source On-State Resistance vs Junction Tempearture

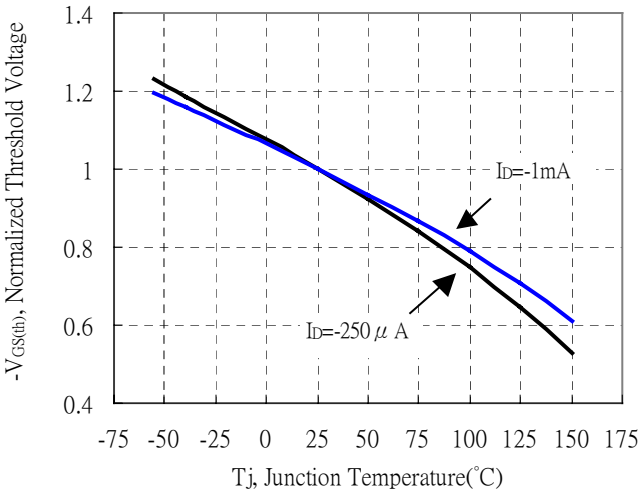


Typical Characteristics(Cont.)

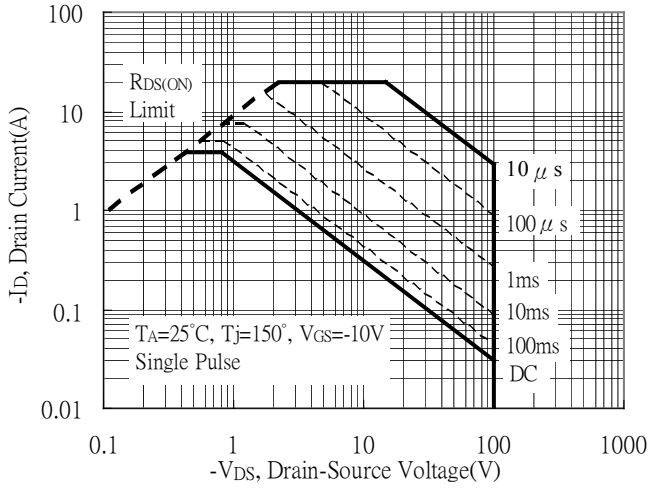
Capacitance vs Drain-to-Source Voltage



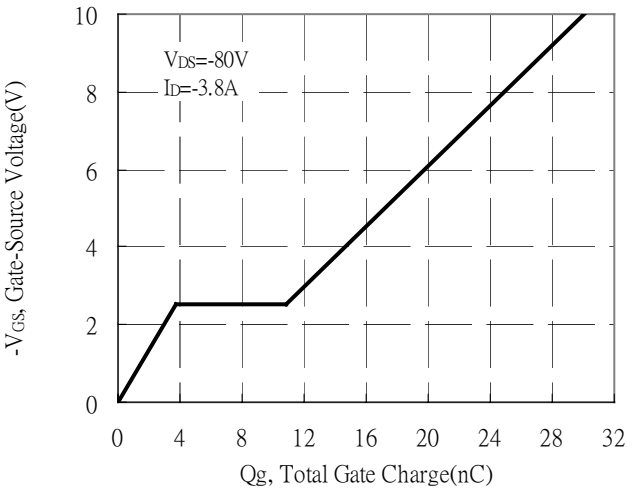
Threshold Voltage vs Junction Tempearture



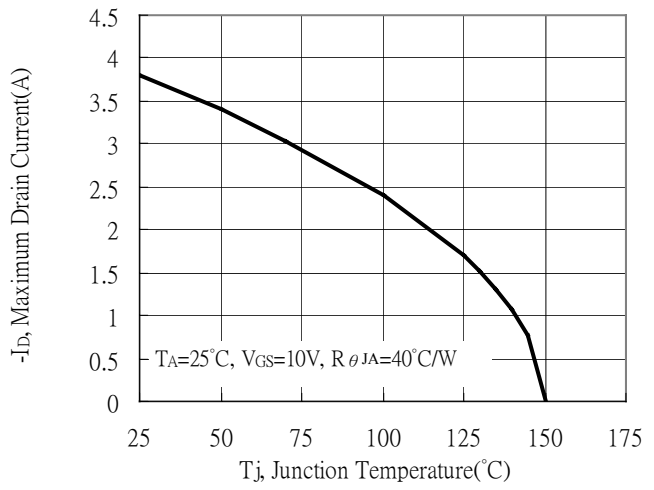
Maximum Safe Operating Area



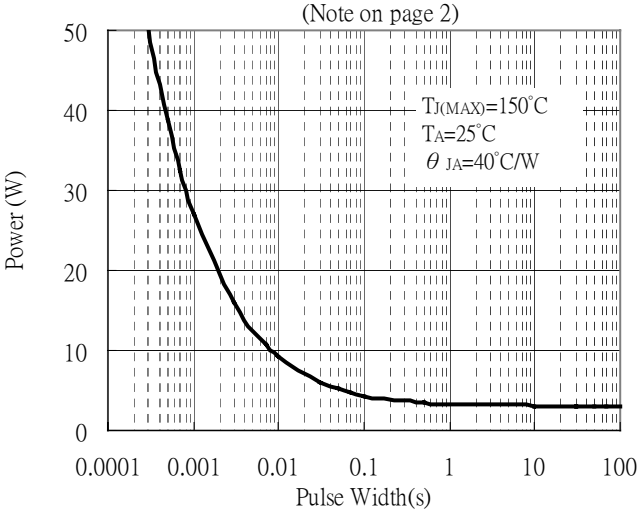
Gate Charge Characteristics



Maximum Drain Current vs Junction Temperature

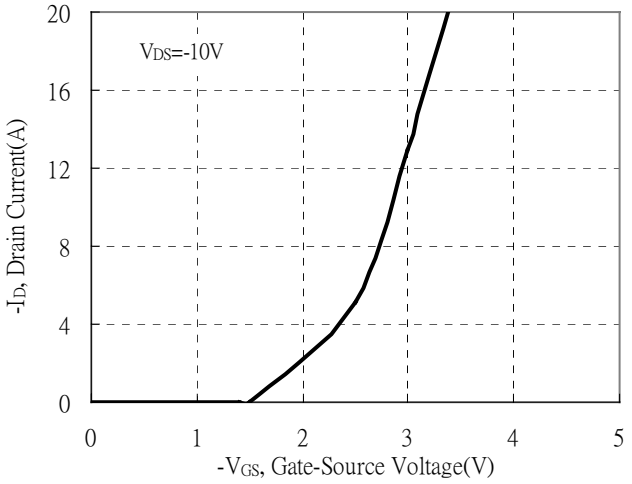


Single Pulse Power Rating, Junction to Ambient
(Note on page 2)

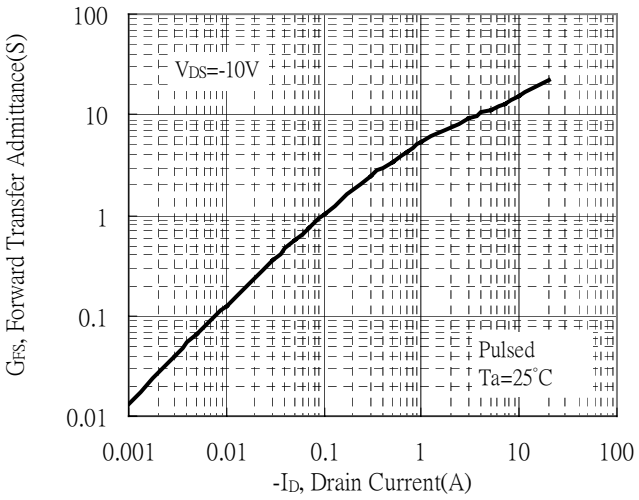


Typical Characteristics(Cont.)

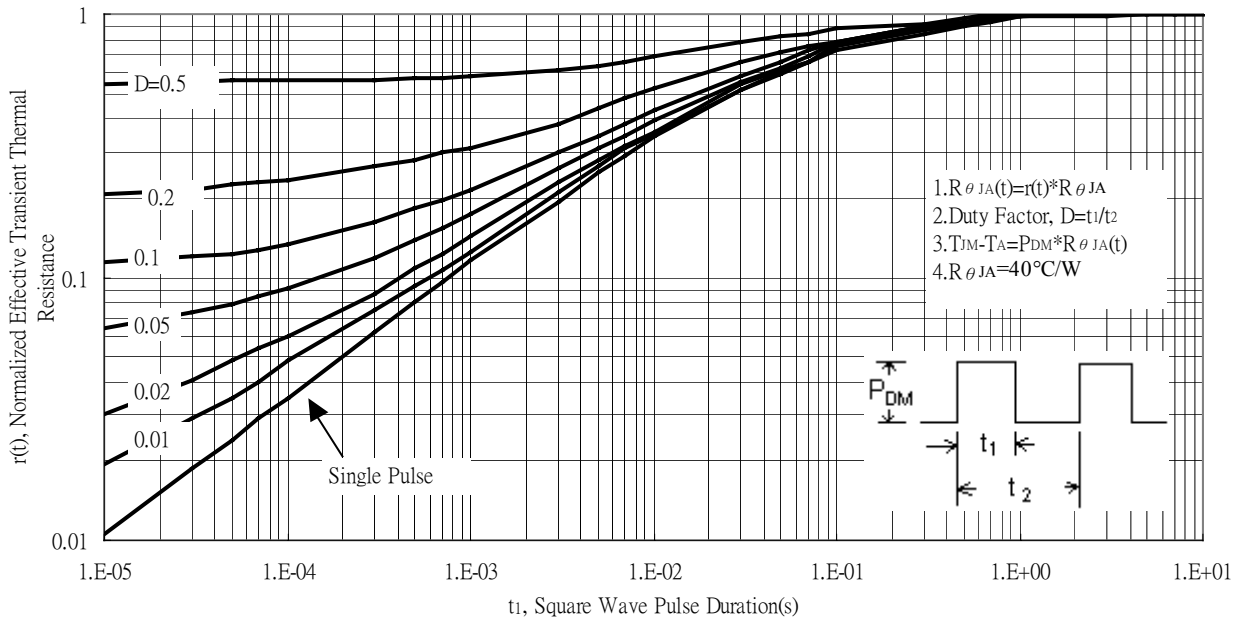
Typical Transfer Characteristics



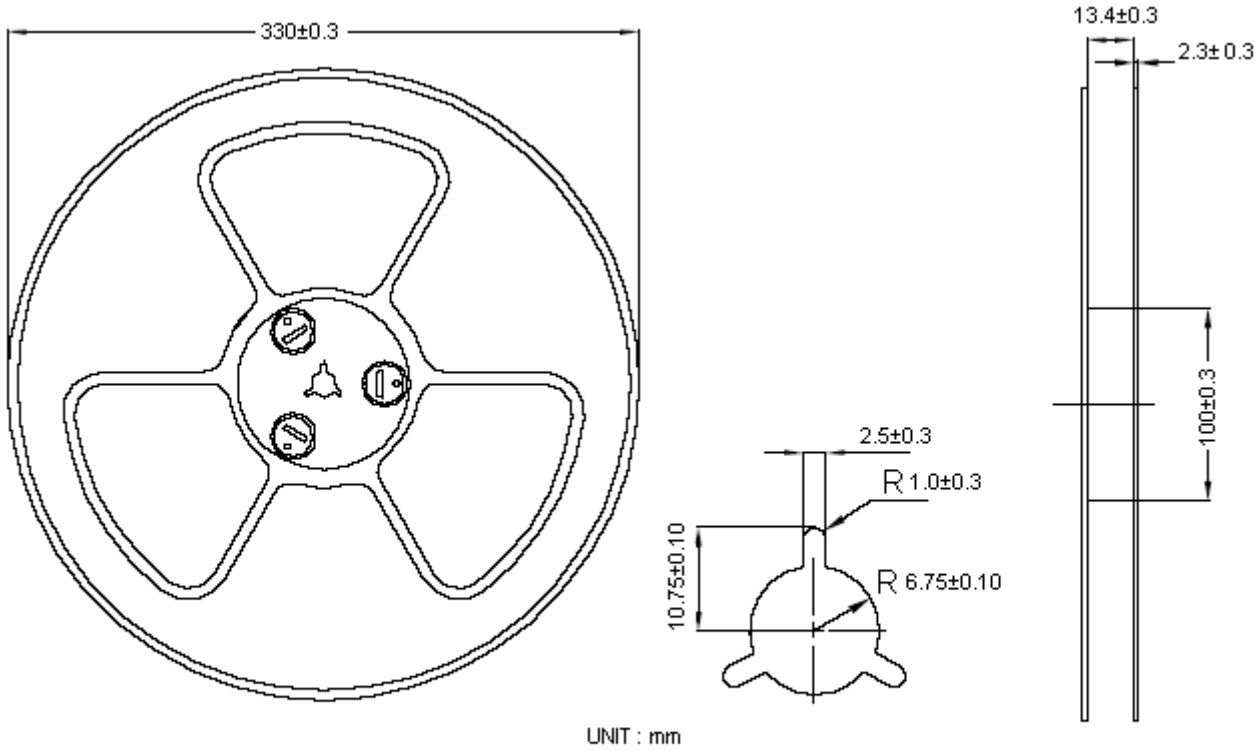
Forward Transfer Admittance vs Drain Current



Transient Thermal Response Curves



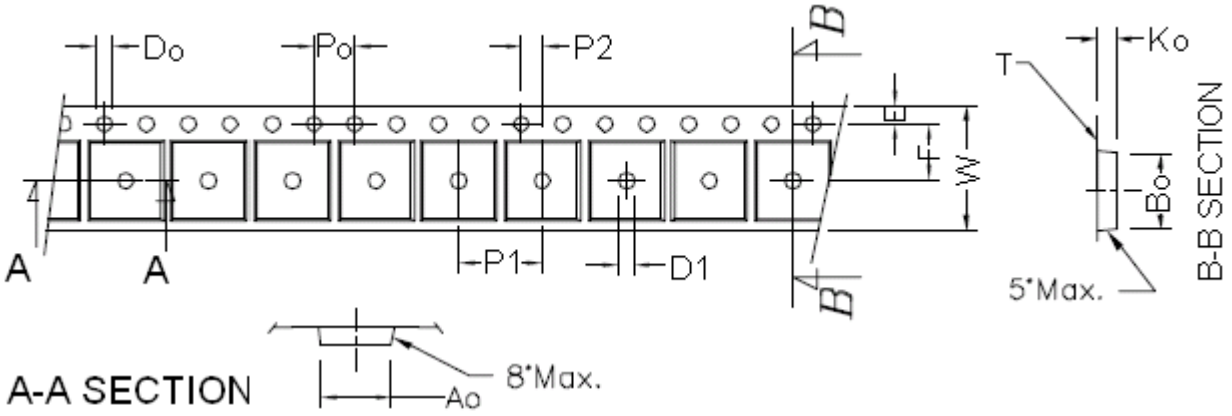
Reel Dimension



UNIT : mm

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

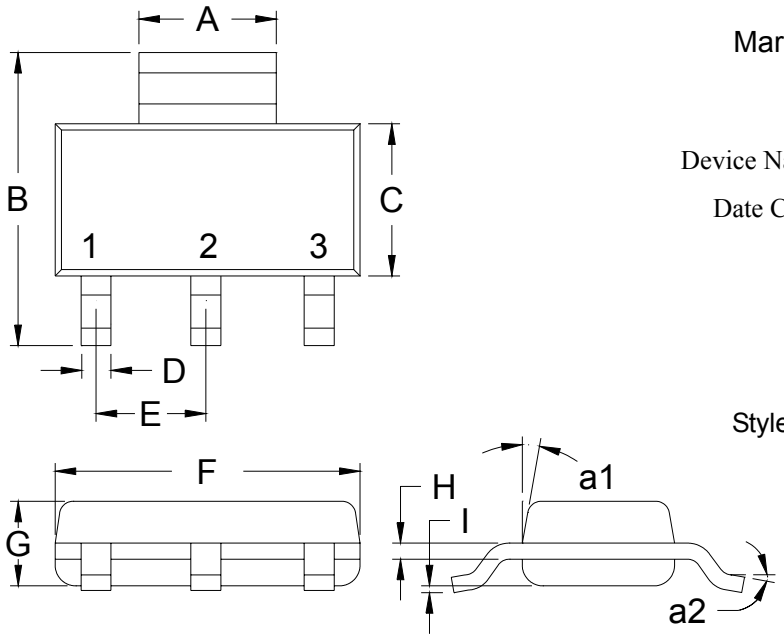
Carrier Tape Dimension



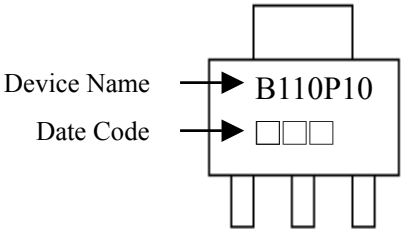
Symbol	Ao	Bo	Ko	Po	P1	P2	T
Spec	6.83±0.1	7.42±0.1	1.88±0.1	4.0±0.1	8.0±0.10	2.0±0.05	0.292±0.02
Symbol	E	F	Do	D1	W	10Po	
Spec	1.75±0.1	5.5±0.05	1.60±0.1	1.5±0.25	$12^{+0.3}_{-0.1}$	40.0±0.2	

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					