

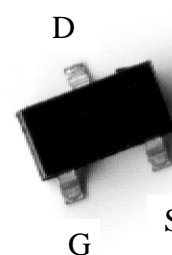
P-CHANNEL Enhancement Mode MOSFET

Features:

- Low gate charge
- Compact and low profile SOT-23 package
- Advanced trench process technology
- High density cell design for ultra low on resistance
- Pb-free lead plating package

Outline

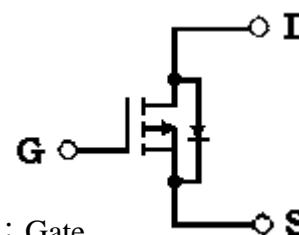
SOT-23



BV_{DSS}	-30V
$I_D @ V_{GS}=-10V, T_A=25^{\circ}C$	-3.7A
$R_{DS(on)} @ V_{GS}=-10V, I_D=-3A$	52m Ω (typ)
$R_{DS(on)} @ V_{GS}=-4.5V, I_D=-2.6A$	76m Ω (typ)

Equivalent Circuit

K3403



G : Gate
 S : Source
 D : Drain

Ordering Information

Device	Package	Shipping
K3403	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V _{DS}	-30	V
Gate-Source Voltage	V _{GS}	±20	
Continuous Drain Current @ V _{GS} =-10V, T _A =25°C (Note 1)	I _D	-3.7	A
Continuous Drain Current @ V _{GS} =-10V, T _A =70°C (Note 1)		-2.9	
Pulsed Drain Current (Note 2)	I _{DM}	-12	
Maximum Power Dissipation	P _D	1.38	W
Linear Derating Factor		0.01	W/°C
ESD susceptibility (Note 3)		400	V
Operating Junction and Storage Temperature	T _j , T _{stg}	-55~+150	°C

- Note : 1. Surface mounted on 1 in² copper pad of FR-4 board, 270°C/W when mounted on minimum copper pad.
 2. Pulse width limited by maximum junction temperature.
 3. Human body model, 1.5kΩ in series with 100pF

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient	R _{th,ja}	90	°C/W

Note : Surface mounted on 1 in² copper pad of FR-4 board, 270°C/W when mounted on minimum copper pad.

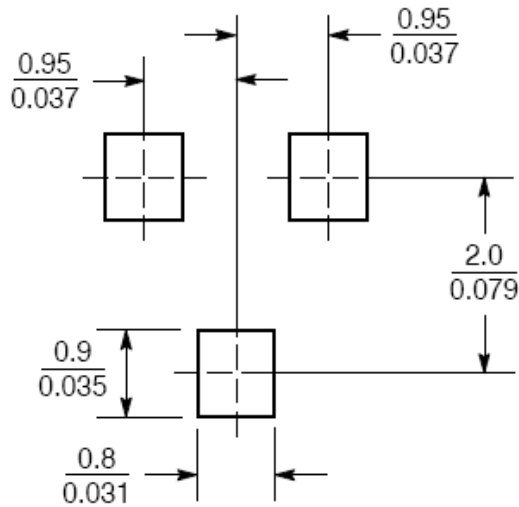
Electrical Characteristics (T_j=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	-30	-	-	V	V _{GS} =0V, I _D =-250μA
ΔBV _{DSS} /ΔT _j	-	-0.02	-	V/°C	Reference to 25°C, I _D =-1mA
BV _{DSX}	-15	-22	-	V	V _{GS} =+20V, I _D =-1mA
V _{GS(th)}	-1.0	-	-3.0		V _{DS} =V _{GS} , I _D =-250μA
	-1.0	-	-3.0	V _{DS} =5V, I _D =-1mA	
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0V
I _{DSS}	-	-	-1	μA	V _{DS} =-30V, V _{GS} =0V
	-	-	-25		V _{DS} =-24V, V _{GS} =0V, T _j =55°C
*R _{Ds(ON)}	-	52	75	mΩ	I _D =-3.0A, V _{GS} =-10V
	-	76	120		I _D =-2.6A, V _{GS} =-4.5V
*G _{FS}	-	3.8	-	S	V _{DS} =-10V, I _D =-3A
	-	2.5	-	S	V _{DS} =-6V, I _D =-0.65A
Dynamic					
C _{iss}	-	612	-	pF	V _{DS} =-25V, V _{GS} =0V, f=1MHz
C _{oss}	-	66	-		
C _{rss}	-	55	-		

*td(ON)	-	8	-	ns	V _{DS} =-15V, I _D =-1A, V _{GS} =-10V, R _D =15Ω , R _G =3.3Ω
*tr	-	5	-		
*td(OFF)	-	20	-		
*tf	-	7	-		
*Qg	-	5	8	nC	V _{DS} =-24V, I _D =-3A, V _{GS} =-4.5V
*Qgs	-	1	-		
*Qgd	-	3	-		
Source-Drain Diode					
*V _{SD}	-	-	-1.2	V	V _{GS} =0V, I _S =-1.2A
*trr	-	20	-	ns	I _F =-3A, V _{GS} =0V, dI _F /dt=100A/μs
*Q _{rr}	-	15	-	nC	

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

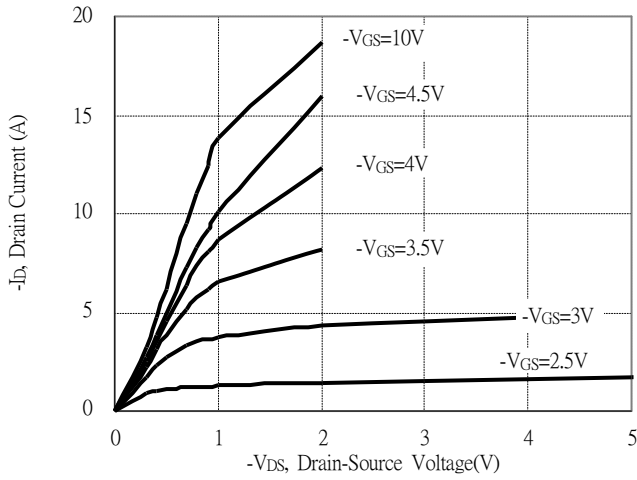
Recommended Soldering Footprint



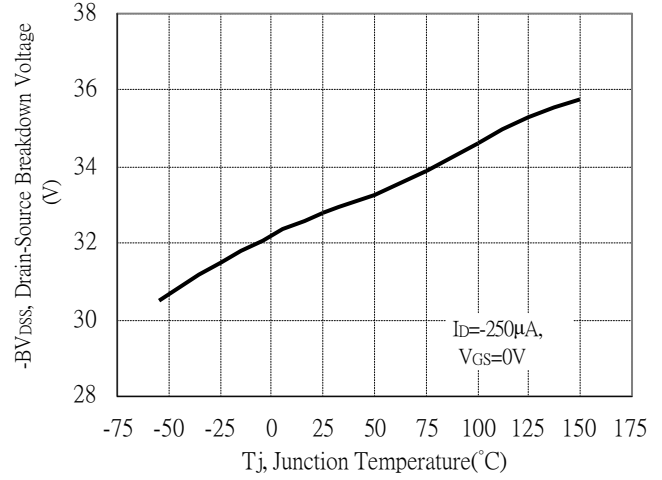
Unit : $\frac{\text{mm}}{\text{inches}}$

Typical Characteristics

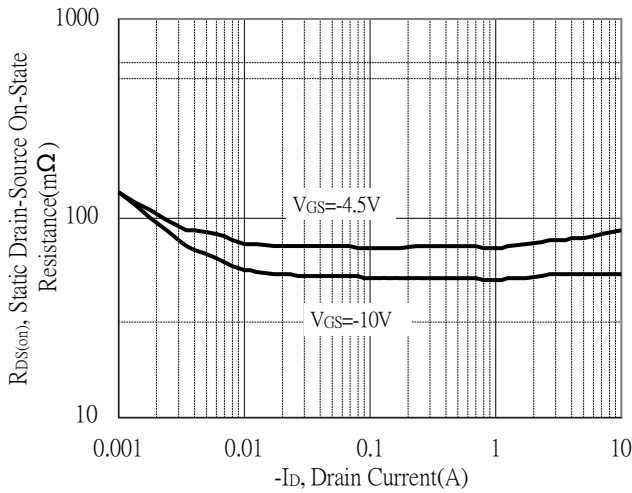
Typical Output Characteristics



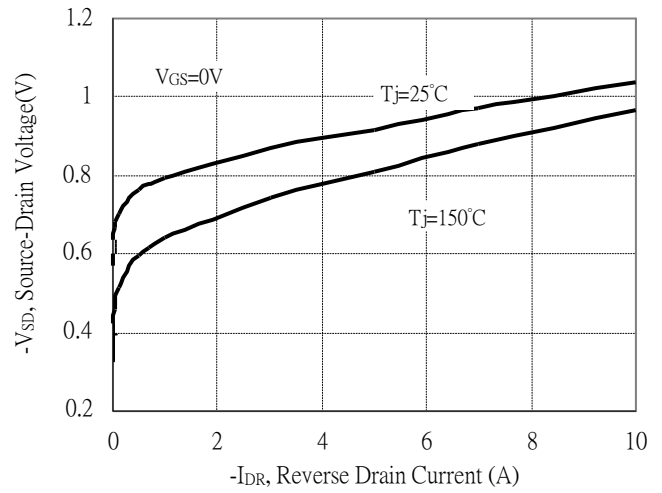
Breakdown Voltage vs Ambient Temperature



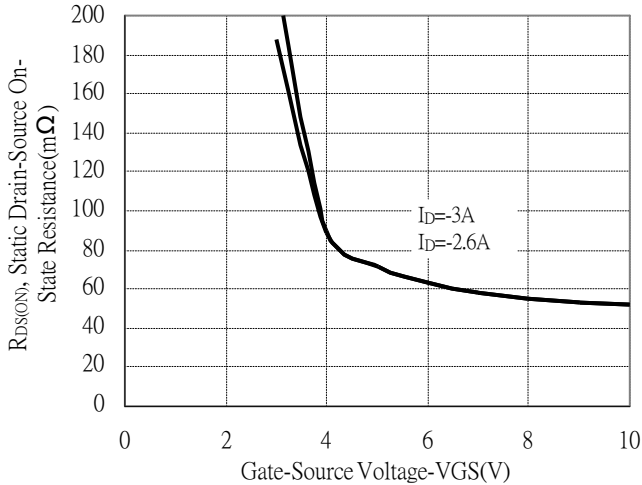
Static Drain-Source On-State resistance vs Drain Current



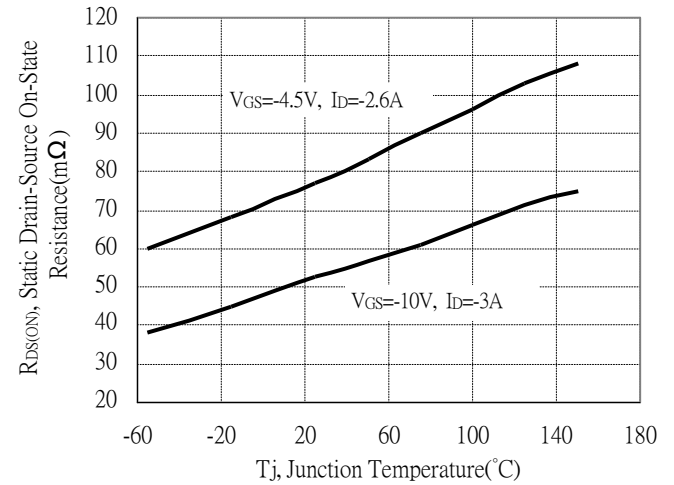
Reverse Drain Current vs Source-Drain Voltage



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

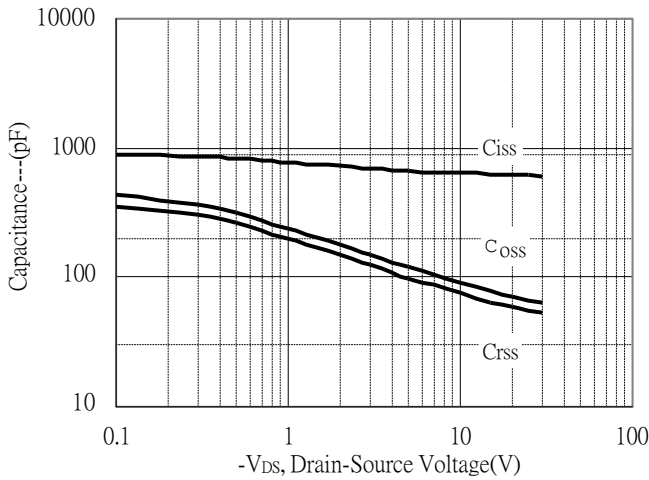


Drain-Source On-State Resistance vs Junction Temperature

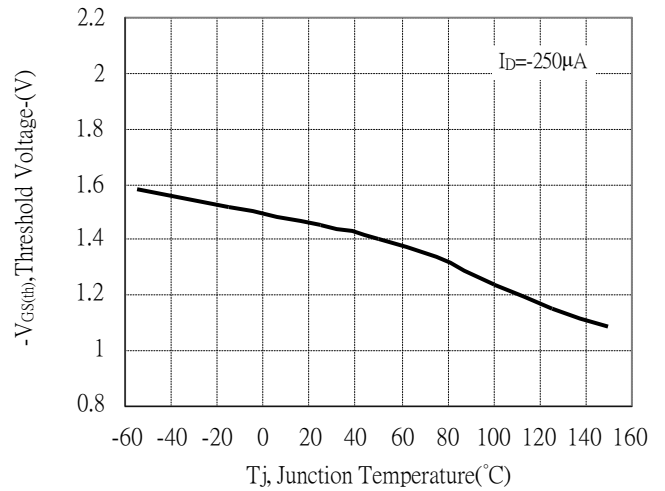


Typical Characteristics(Cont.)

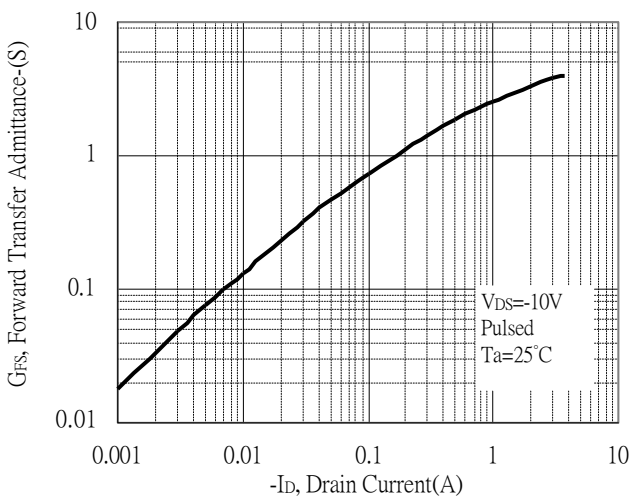
Capacitance vs Drain-to-Source Voltage



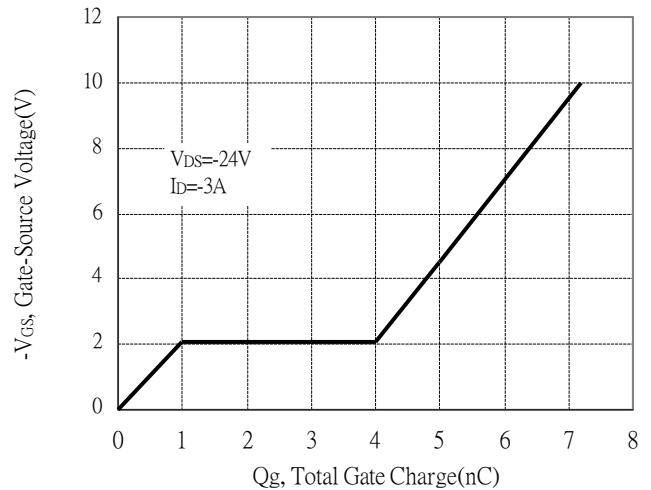
Threshold Voltage vs Junction Temperature



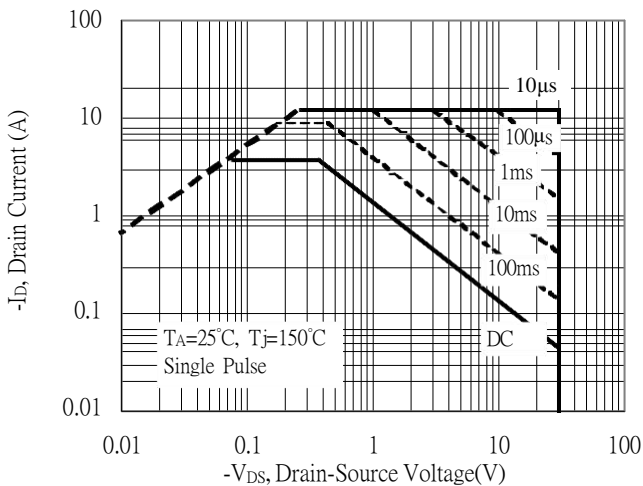
Forward Transfer Admittance vs Drain Current



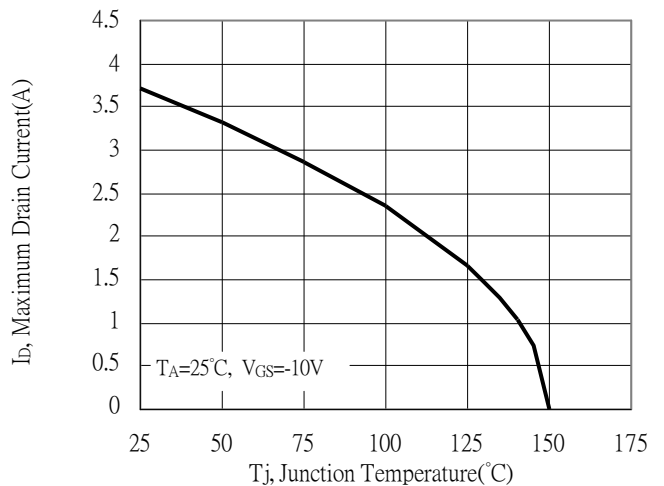
Gate Charge Characteristics



Maximum Safe Operating Area

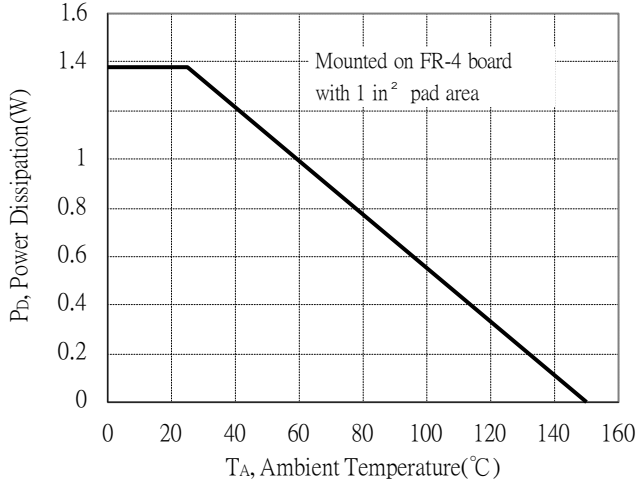


Maximum Drain Current vs Junction Temperature

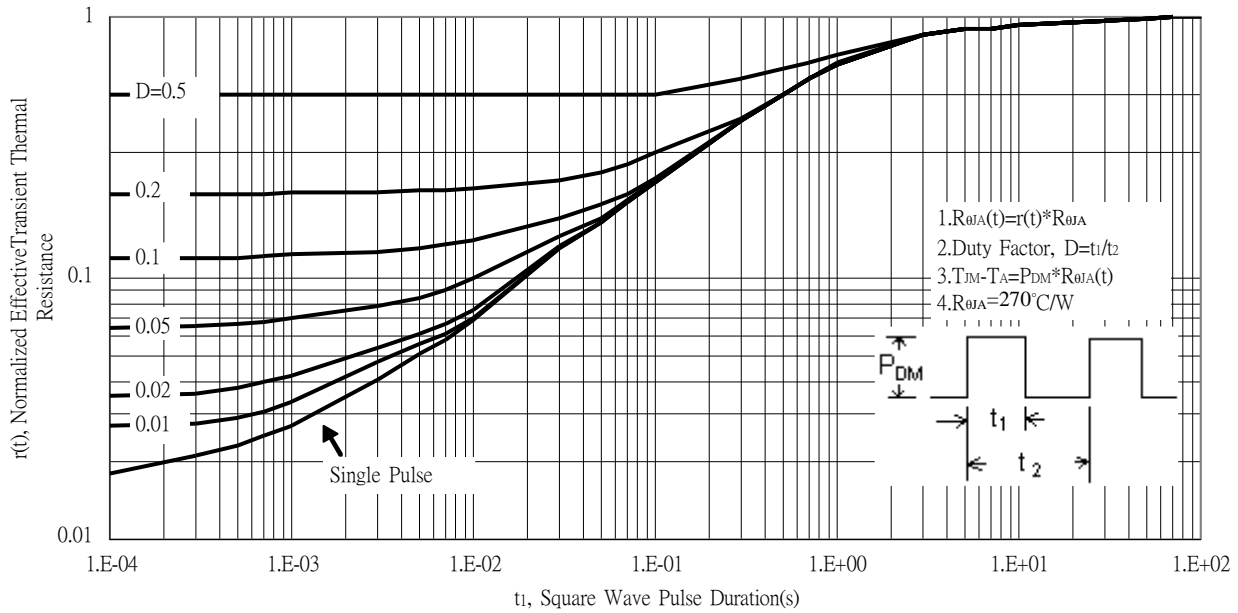


Typical Characteristics(Cont.)

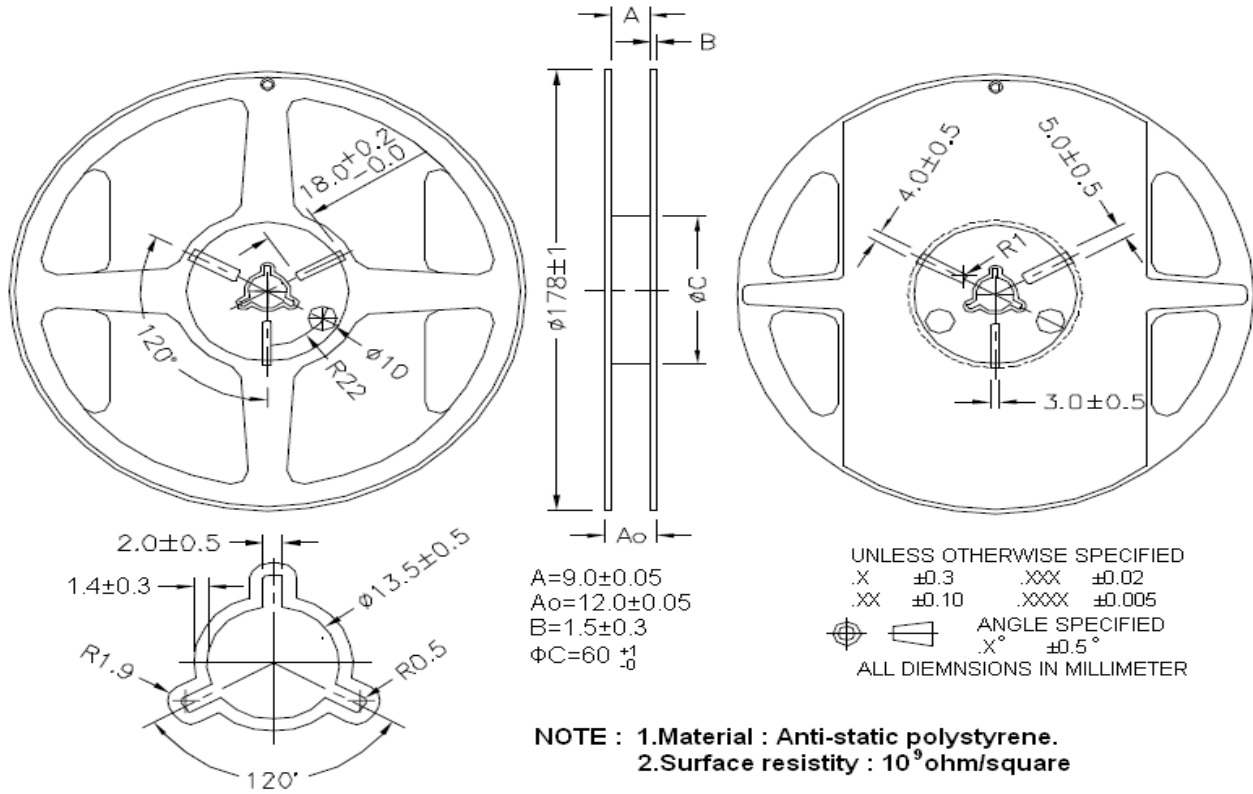
Power Derating Curve



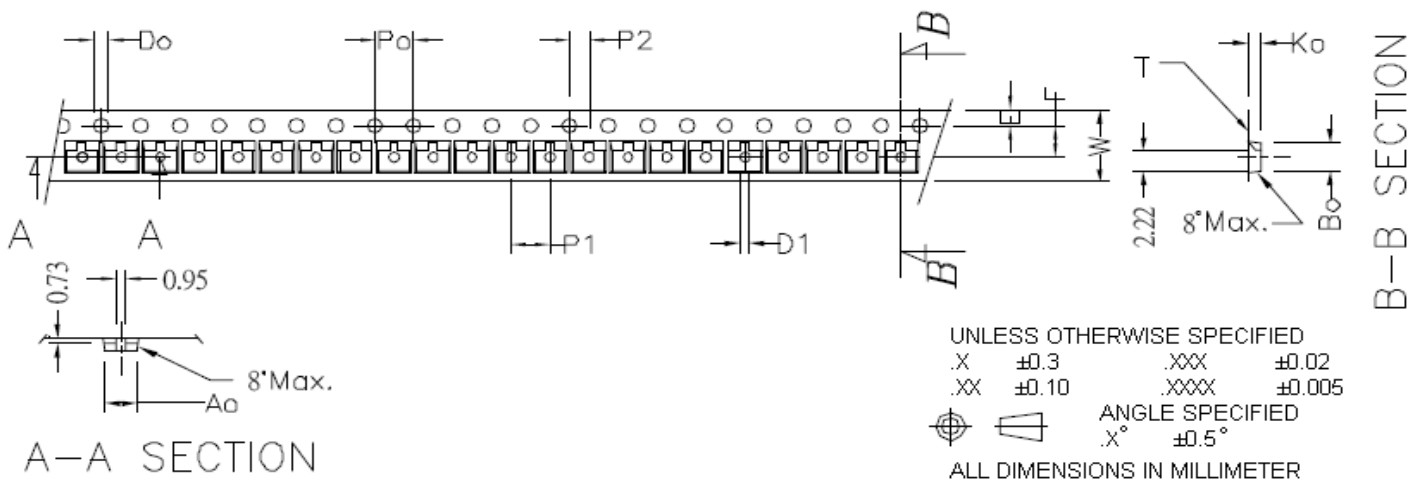
Transient Thermal Response Curves



Reel Dimension

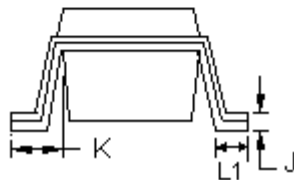
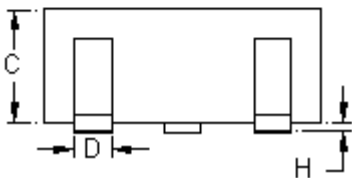
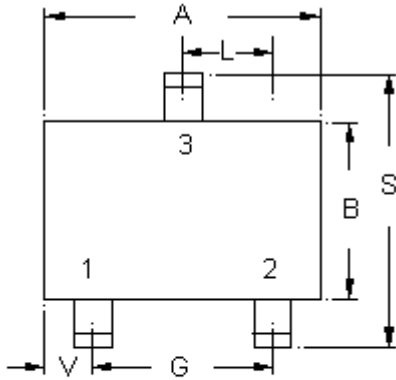


Carrier Tape Dimension

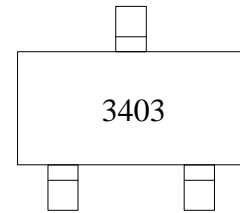


symbol	Ao	Bo	Ka	Po	P1	P2	T
Spec	3.20±0.1	3.00±0.1	1.33±0.1	4.0±0.1	4.0±0.10	2.0±0.05	0.20±0.02
symbol	E	F	Do	D1	W	10Po	
Spec	1.75±0.1	3.5±0.05	1.50±0.10	1.0±0.25	8.0 ^{+0.3} _{-0.1}	40.0±0.2	

SOT-23 Dimension



Marking:



3-Lead SOT-23 Plastic
 Surface Mounted Package
 Package Code: N3

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

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0032	0.0079	0.08	0.20
B	0.0472	0.0669	1.20	1.70	K	0.0118	0.0266	0.30	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1161	2.10	2.95
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0000	0.0040	0.00	0.10	L1	0.0118	0.0197	0.30	0.50