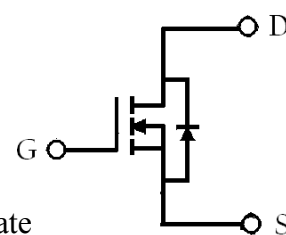
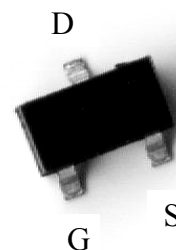


## 30V N-CHANNEL Enhancement Mode MOSFET

### Features:

- Low on-resistance
- Low gate charge
- Excellent thermal and electrical capabilities
- Pb-free lead plating and halogen-free package

SOT-23



G : Gate  
 S : Source  
 D : Drain

BV <sub>DSS</sub>	30V
I <sub>D</sub> @V <sub>GS</sub> =4.5V, T <sub>A</sub> =25°C	5.5A
R <sub>DS(on)</sub> @V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A	27mΩ (typ)
R <sub>DS(on)</sub> @V <sub>GS</sub> =2.5V, I <sub>D</sub> =2.6A	30mΩ (typ)

### Ordering Information

Device	Package	Shipping
K2306A	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 <sub>DS</sub>	30	V
Gate-Source Voltage	V <sub>GS</sub>	±12	V
Continuous Drain Current @ TA=25°C, V <sub>GS</sub> =4.5V (Note 3)	I <sub>D</sub>	5.5	A
Continuous Drain Current @ TA=70°C, V <sub>GS</sub> =4.5V (Note 3)	I <sub>D</sub>	4.4	A
Pulsed Drain Current (Note 1, 2)	I <sub>DM</sub>	30	A
Maximum Power Dissipation @ TA=25°C	P <sub>D</sub>	1.38	W
Linear Derating Factor		0.01	W/°C
Thermal Resistance, Junction-to-Ambient (Note 3)	R <sub>th,ja</sub>	90	°C/W
Operating Junction and Storage Temperature	T <sub>j</sub> , T <sub>stg</sub>	-55~+150	°C

- Note : 1. Pulse width limited by maximum junction temperature.  
 2. Pulse width ≤ 300μs, duty cycle ≤ 2%.  
 3. Surface mounted on 1 in<sup>2</sup> copper pad of FR-4 board; 270°C/W when mounted on minimum copper pad.

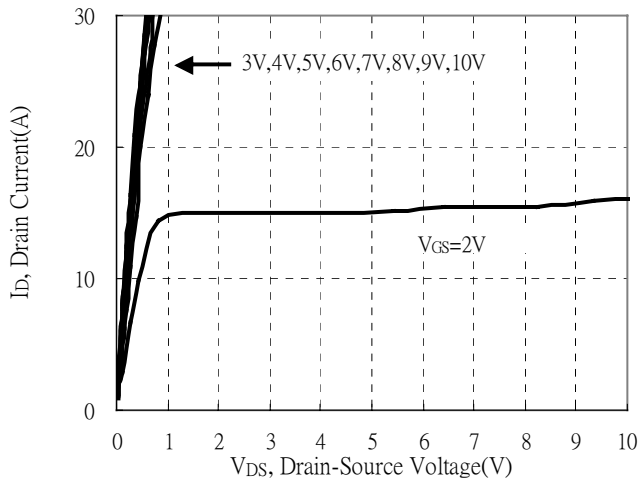
### Electrical Characteristics (Tj=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
<b>Static</b>					
BV <sub>DSS</sub>	30	-	-	V	V <sub>GS</sub> =0, I <sub>D</sub> =250μA
BV <sub>DSS</sub> /ΔT <sub>j</sub>	-	0.1	-	V/°C	Reference to 25°C, I <sub>D</sub> =1mA
V <sub>GS(th)</sub>	0.5	0.8	1.2	V	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250μA
G <sub>FS</sub>	-	11	-	S	V <sub>DS</sub> =5V, I <sub>D</sub> =5A
I <sub>GSS</sub>	-	-	±100	nA	V <sub>GS</sub> =±12V, V <sub>DS</sub> =0
I <sub>DSS</sub>	-	-	1	μA	V <sub>DS</sub> =25V, V <sub>GS</sub> =0
	-	-	25	μA	V <sub>DS</sub> =20V, V <sub>GS</sub> =0, T <sub>j</sub> =70°C
*R <sub>DS(ON)</sub>	-	25	30	mΩ	V <sub>GS</sub> =10V, I <sub>D</sub> =5A
	-	27	35		V <sub>GS</sub> =4.5V, I <sub>D</sub> =5A
	-	30	50		V <sub>GS</sub> =2.5V, I <sub>D</sub> =2.6A
<b>Dynamic</b>					
C <sub>iss</sub>	-	1021	1050	pF	V <sub>DS</sub> =25V, V <sub>GS</sub> =0, f=1MHz
C <sub>oss</sub>	-	44	-		
C <sub>rss</sub>	-	41	-		
*t <sub>d(ON)</sub>	-	6	-	ns	V <sub>DS</sub> =15V, I <sub>D</sub> =5A, V <sub>GS</sub> =10V, R <sub>G</sub> =3.3Ω, R <sub>D</sub> =3Ω
*t <sub>r</sub>	-	20	-		
*t <sub>d(OFF)</sub>	-	20	-		
*t <sub>f</sub>	-	3	-		
*Q <sub>g</sub>	-	9.7	-	nC	V <sub>DS</sub> =15V, I <sub>D</sub> =5A, V <sub>GS</sub> =4.5V
*Q <sub>gs</sub>	-	2.7	-		
*Q <sub>gd</sub>	-	4.1	-		
<b>Source-Drain Diode</b>					
*V <sub>SD</sub>	-	-	1.2	V	V <sub>GS</sub> =0V, I <sub>S</sub> =1.2A
*t <sub>rr</sub>	-	14	-	ns	I <sub>S</sub> =5A, V <sub>GS</sub> =0V, dI/dt=100A/μs
*Q <sub>rr</sub>	-	7	-	nC	

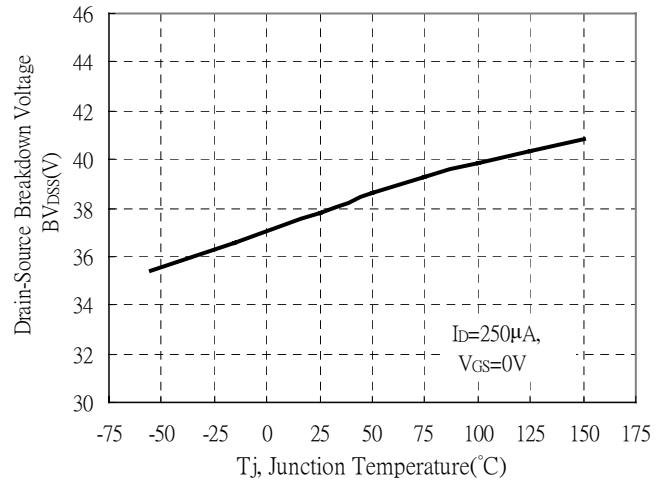
\*Pulse Test : Pulse Width ≤ 300μs, Duty Cycle ≤ 2%

**Typical Characteristics**

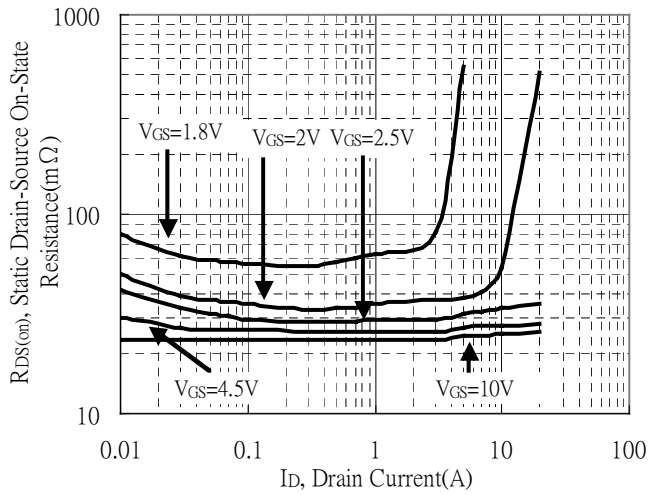
Typical Output Characteristics



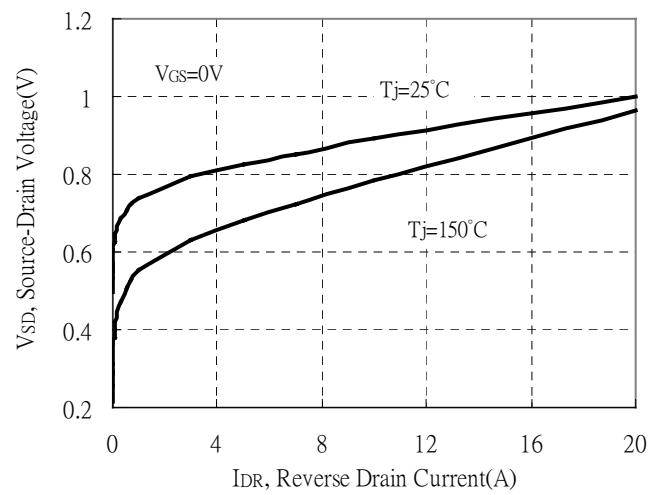
Breakdown Voltage vs Ambient Temperature



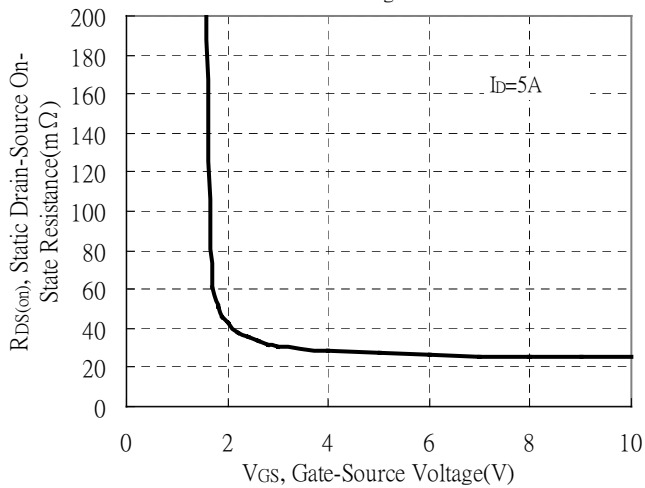
Static Drain-Source On-State resistance vs Drain Current



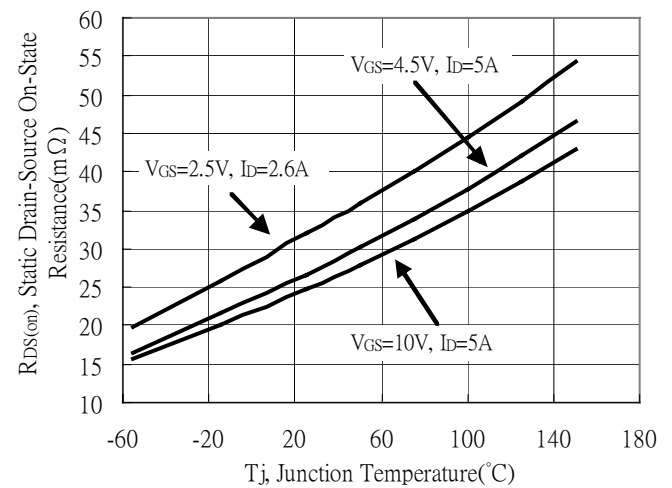
Reverse Drain Current vs Source-Drain Voltage



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

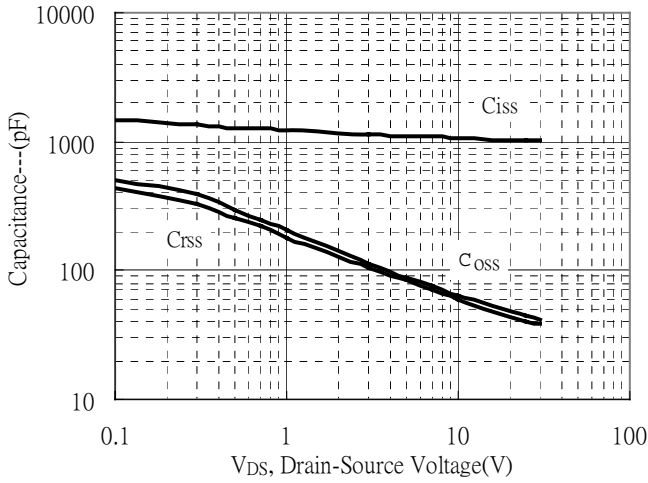


Drain-Source On-State Resistance vs Junction Temperature

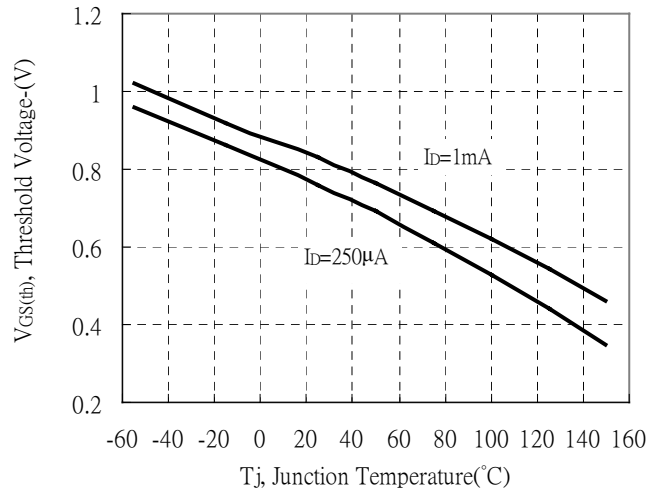


**Typical Characteristics(Cont.)**

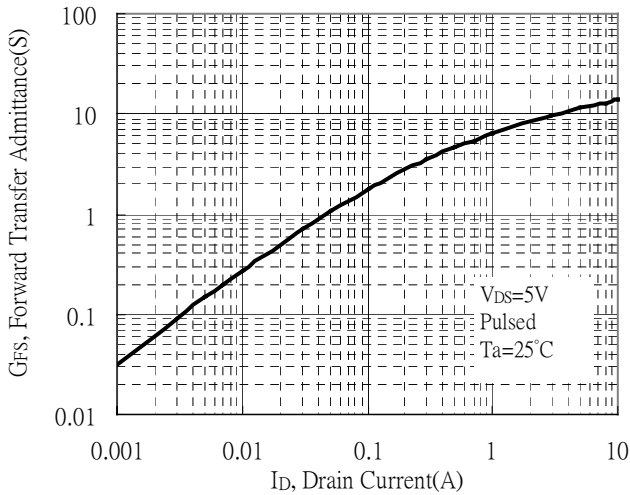
Capacitance vs Drain-to-Source Voltage



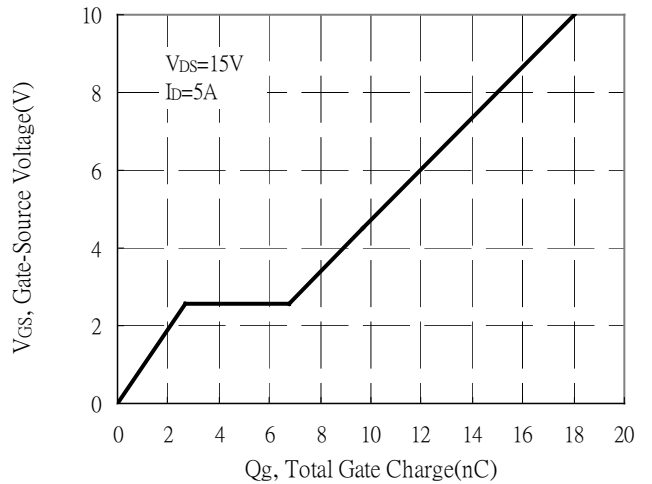
Threshold Voltage vs Junction Temperature



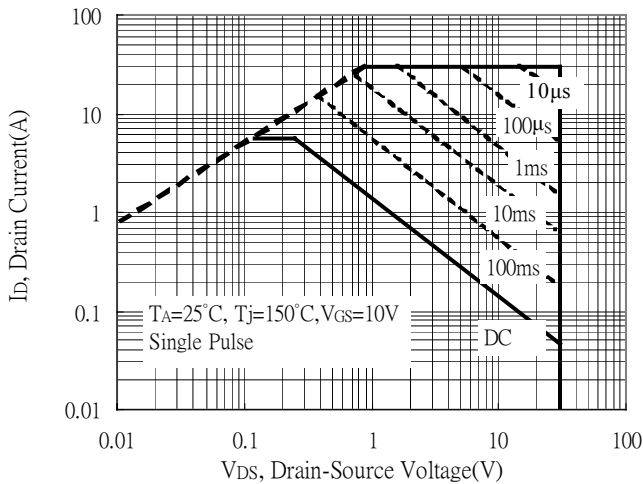
Forward Transfer Admittance vs Drain Current



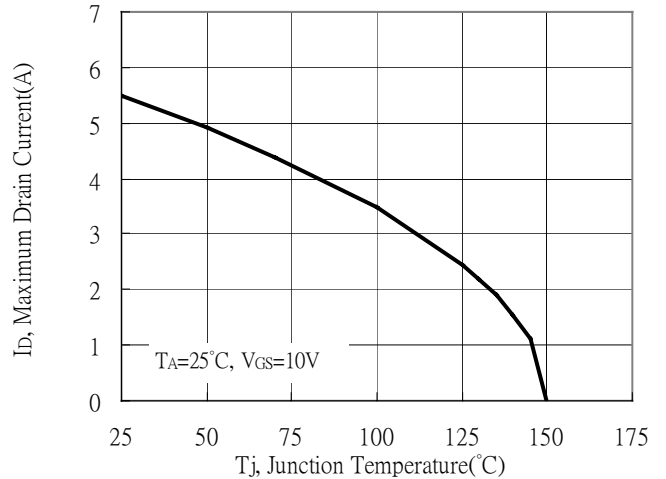
Gate Charge Characteristics



Maximum Safe Operating Area

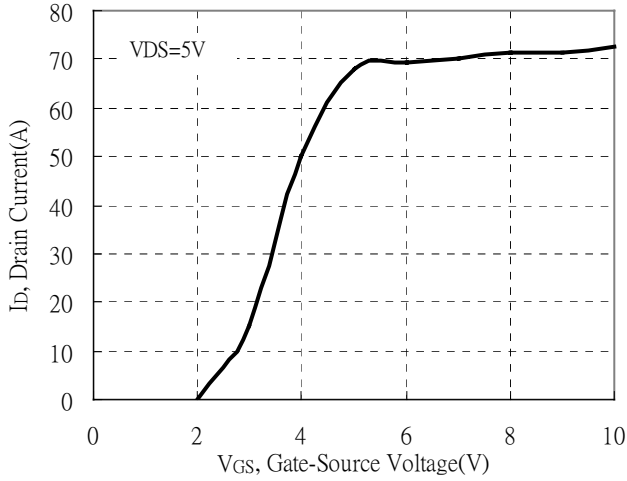


Maximum Drain Current vs Junction Temperature

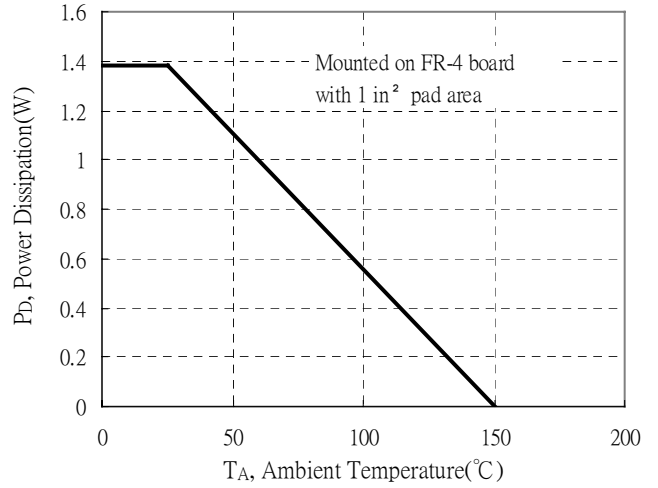


**Typical Characteristics(Cont.)**

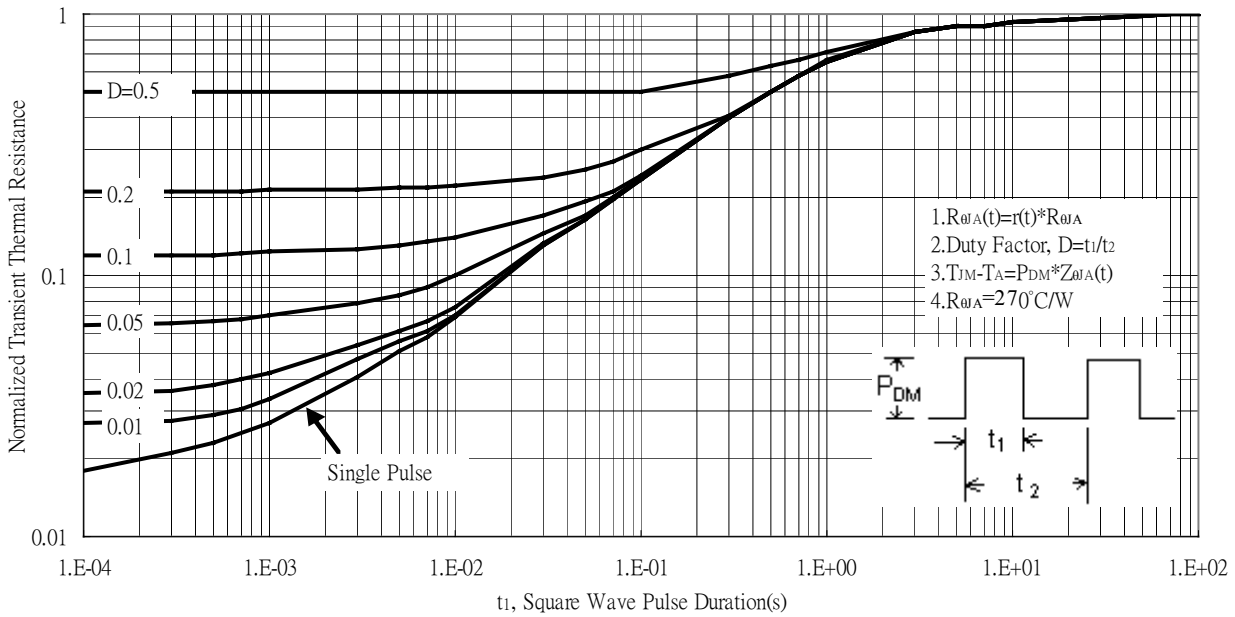
Typical Transfer Characteristics



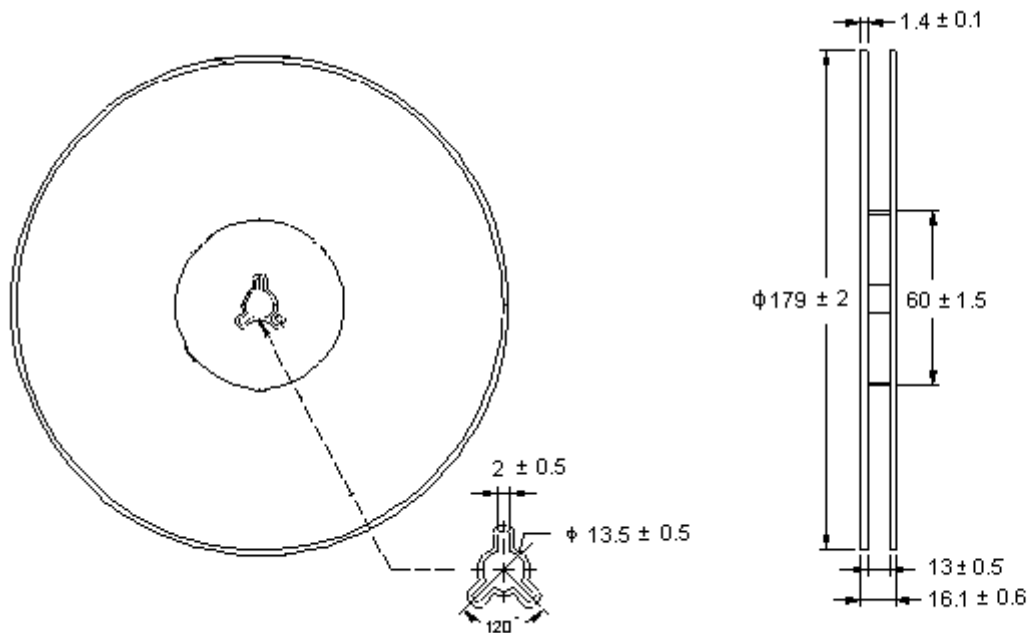
Power Derating Curve



Transient Thermal Response Curves

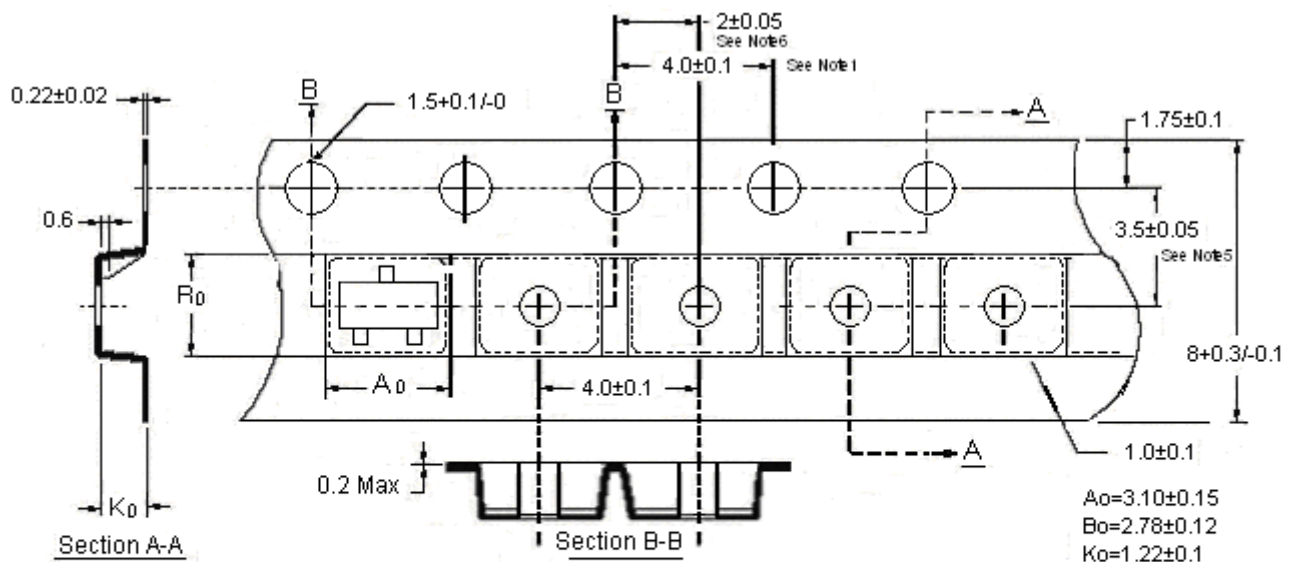


## Reel Dimension



Unit: millimeter

## Carrier Tape Dimension

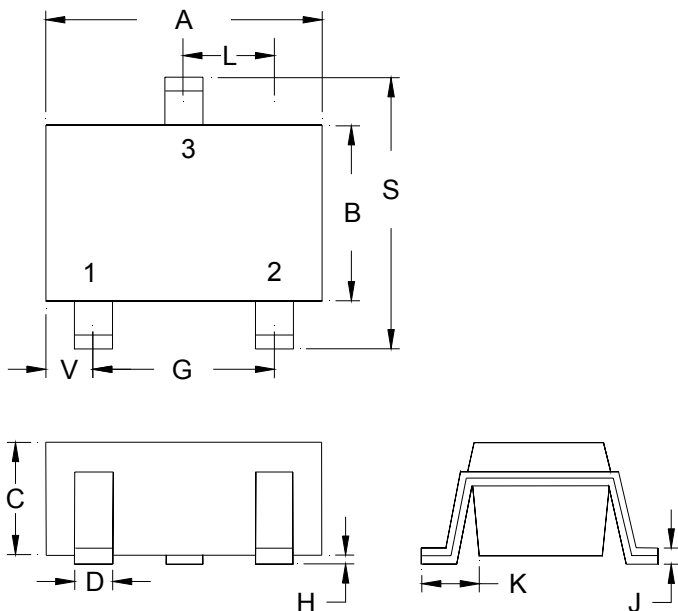


### Notes:

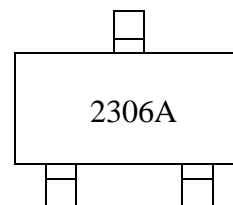
1. 10 sprocket hole pitch cumulative tolerance  $\pm 0.2$ .
2. Camber not to exceed 1mm in 100mm.
3. Material : conductive Black Polystyrene.
4.  $A_0$  &  $B_0$  measured on a plane 0.3mm above the bottom of the pocket.
5.  $K_0$  measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Unit : millimeter

**SOT-23 Dimension**



Marking:



3-Lead SOT-23 Plastic Surface Mounted Package

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

\*: Typical

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.1102	0.1204	2.80	3.04	J	0.0034	0.0070	0.085	0.177
B	0.0472	0.0630	1.20	1.60	K	0.0128	0.0266	0.32	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	0.0005	0.0040	0.013	0.10					