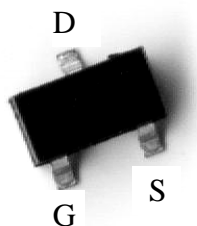


30V N-CHANNEL Enhancement Mode MOSFET

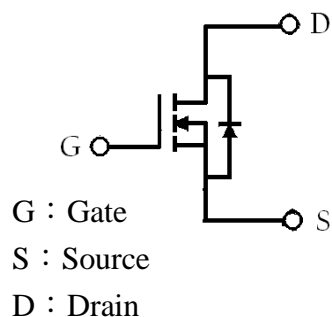
Features:

- Simple drive requirement
- Small package outline
- Pb-free lead plating and halogen-free package

SOT-23



BV _{DSS}		30V
I _D @V _{GS} =10V		5A
R _{DS(on)} (TYP)	V _{GS} =10V, I _D =5A	20mΩ
	V _{GS} =4.5V, I _D =4A	28mΩ



Ordering Information

Device	Package	Shipping
KWN2304	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 @ TA=25°C, V _{GS} =10V	I _D	5	A
Continuous Drain Current @ TA=70°C, V _{GS} =10V		4	
Pulsed Drain Current (Notes 1, 2)	I _{DM}	20	
Maximum Power Dissipation (Note 3)	P _D	TA=25°C	1.38
		TA=70°C	0.83
Operating Junction and Storage Temperature	T _j , T _{stg}	-55~+150	°C

- Note : 1. Pulse width limited by maximum junction temperature.
 2. Pulse width ≤ 300μs, duty cycle ≤ 2%.
 3. Surface mounted on 1 in² copper pad of FR-4 board, t ≤ 5s.

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient(PCB mounted)	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

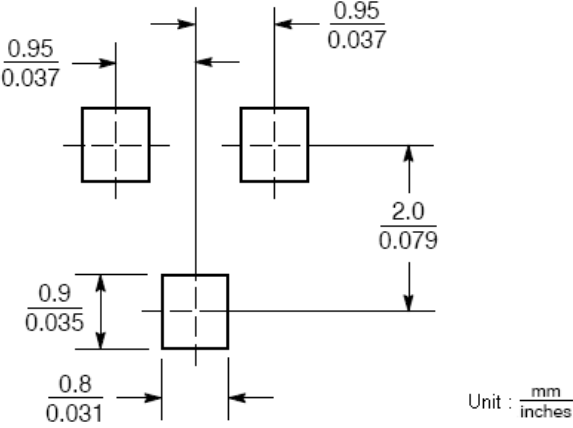
Electrical Characteristics (Tj=25°C, unless otherwise noted)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	30	-	-	V	V _{GS} =0, I _D =250μA
V _{GS(th)}	1.3	1.6	2.5	V	V _{DS} =V _{GS} , I _D =250μA
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0
I _{DSS}	-	-	1	μA	V _{DS} =24V, V _{GS} =0
	-	-	10	μA	V _{DS} =24V, V _{GS} =0, T _j =70°C
*R _{DS(ON)}	-	20	28	mΩ	I _D =5A, V _{GS} =10V
	-	28	40		I _D =4A, V _{GS} =4.5V
*G _{FS}	-	6	-	S	V _{DS} =10V, I _D =4A
Dynamic					
C _{iss}	-	800	-	pF	V _{DS} =15V, V _{GS} =0, f=1MHz
C _{oss}	-	70	-		
C _{rss}	-	71	-		
t _{d(ON)}	-	6	-	ns	V _{DS} =15V, I _D =1A, V _{GS} =10V R _G =6Ω, R _D =15Ω
t _r	-	10	-		
t _{d(OFF)}	-	24	-		
t _f	-	5	-		
Q _g	-	16	-	nC	V _{DS} =15V, I _D =5A, V _{GS} =10V
Q _{gs}	-	3	-		
Q _{gd}	-	5	-		

Source-Drain Diode					
*V _{SD}	-	-	1.3	V	V _{GS} =0V, I _S =1.5A
I _S	-	-	5	A	V _D =V _G =0V, V _S =1.2V
I _{SM}	-	-	20		
trr	-	29	-	ns	I _F =5A, dI _F /dt=100A/μs
Q _{rr}	-	10	-	nC	

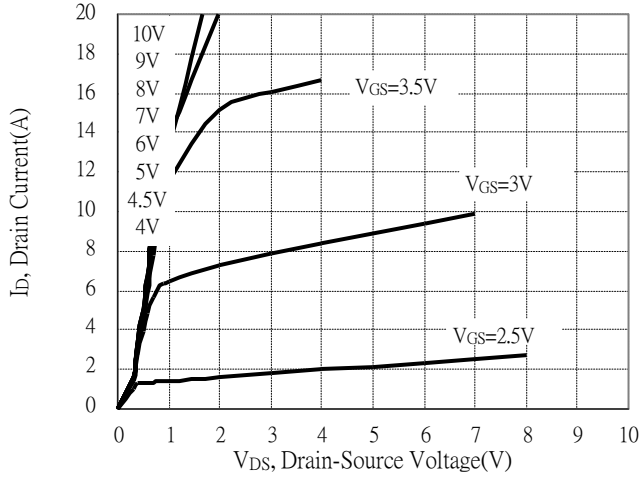
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Recommended Soldering Footprint

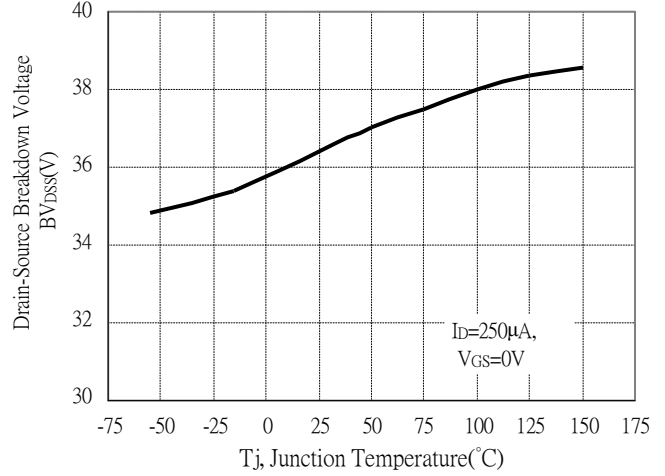


Typical Characteristics

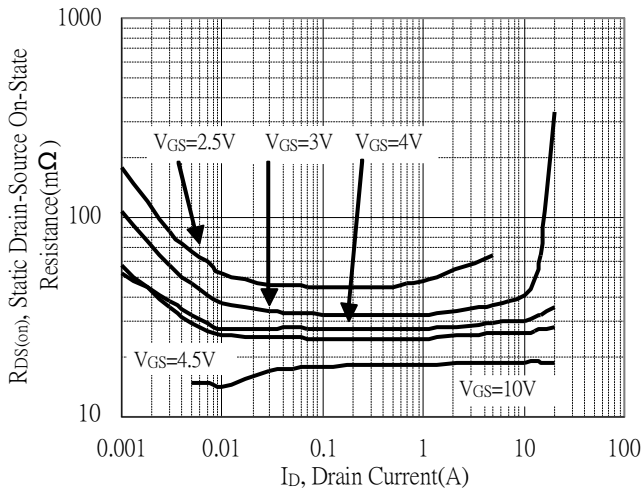
Typical Output Characteristics



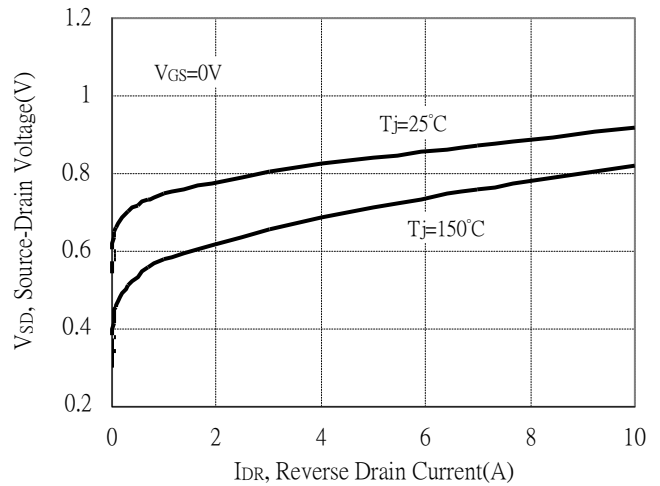
Breakdown Voltage vs Ambient Temperature



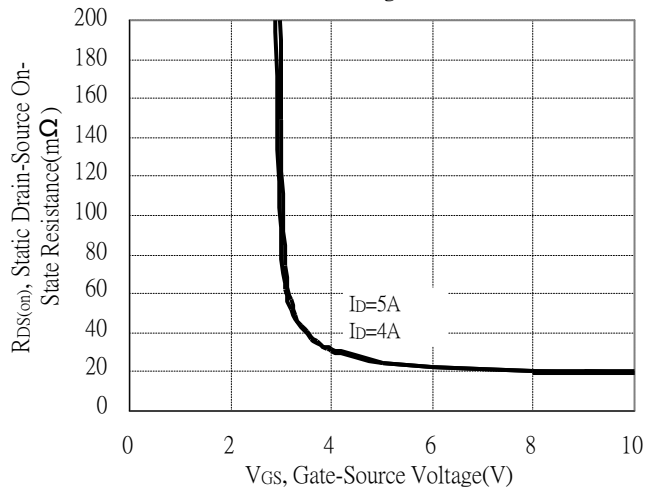
Static Drain-Source On-State resistance vs Drain Current



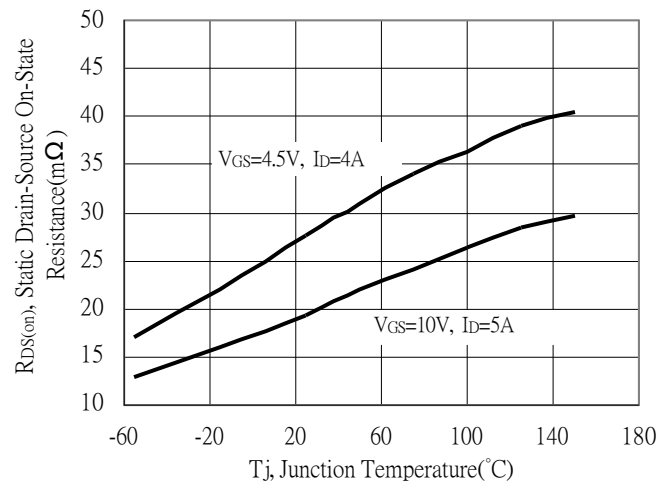
Reverse Drain Current vs Source-Drain Voltage



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

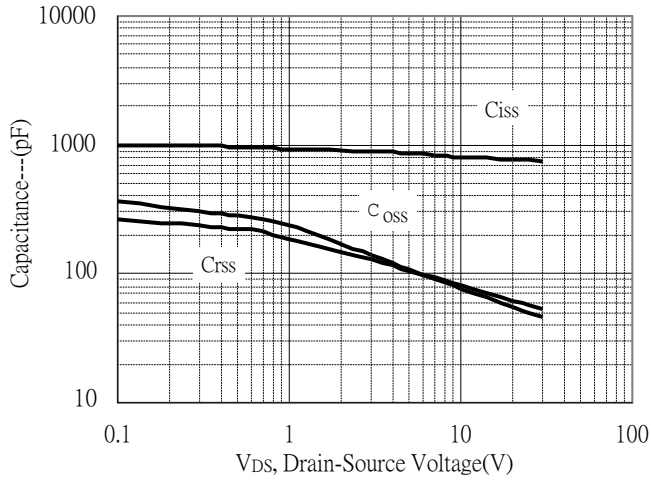


Drain-Source On-State Resistance vs Junction Temperature

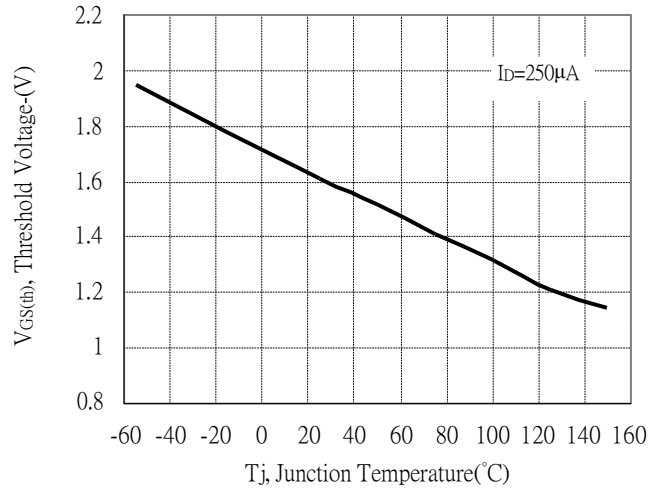


Typical Characteristics(Cont.)

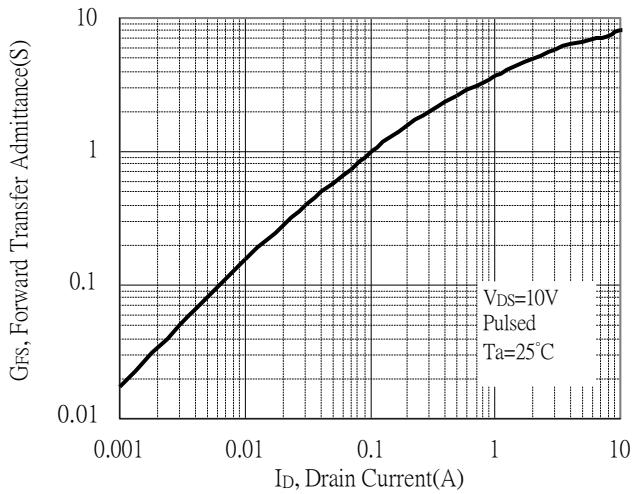
Capacitance vs Drain-to-Source Voltage



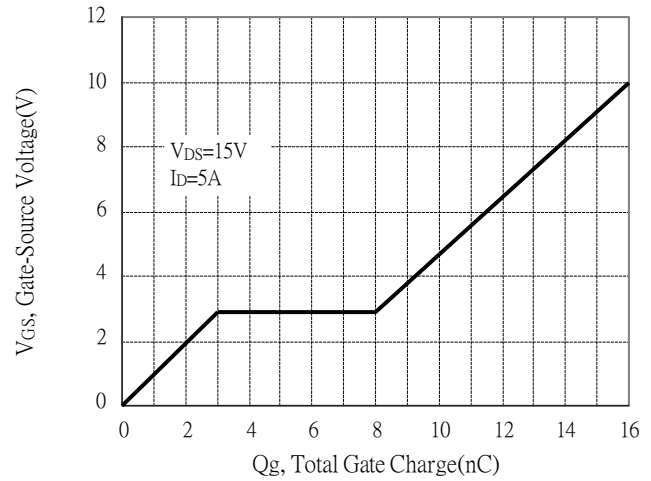
Threshold Voltage vs Junction Temperature



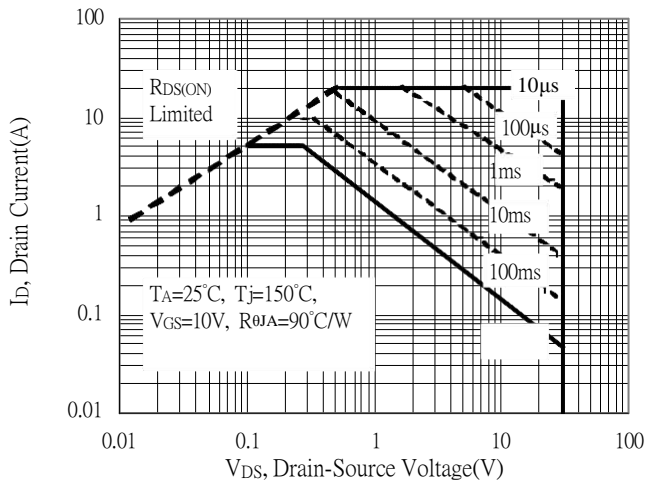
Forward Transfer Admittance vs Drain Current



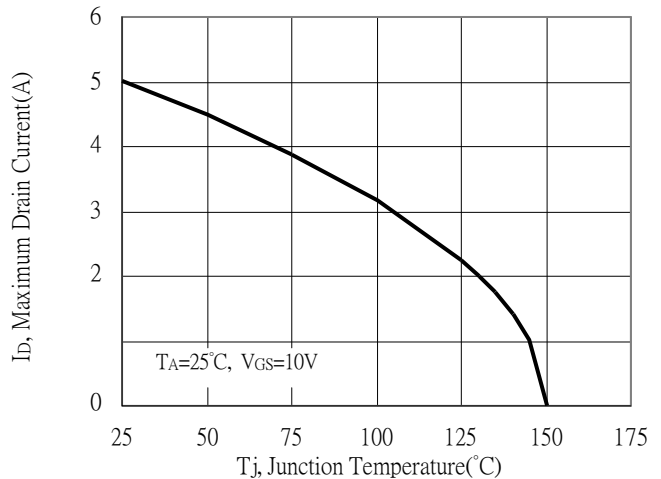
Gate Charge Characteristics



Maximum Safe Operating Area

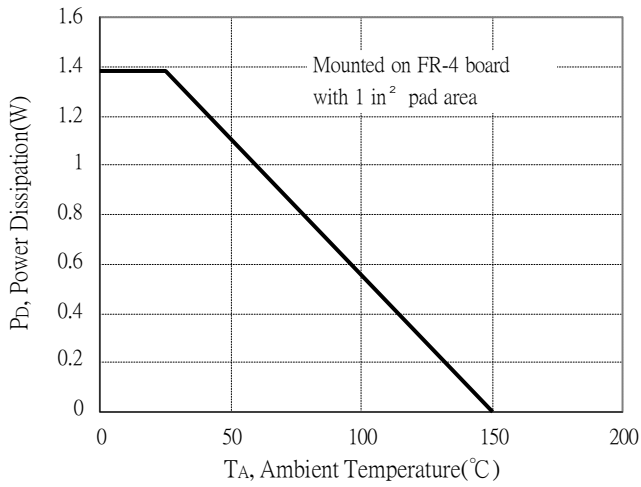


Maximum Drain Current vs Junction Temperature

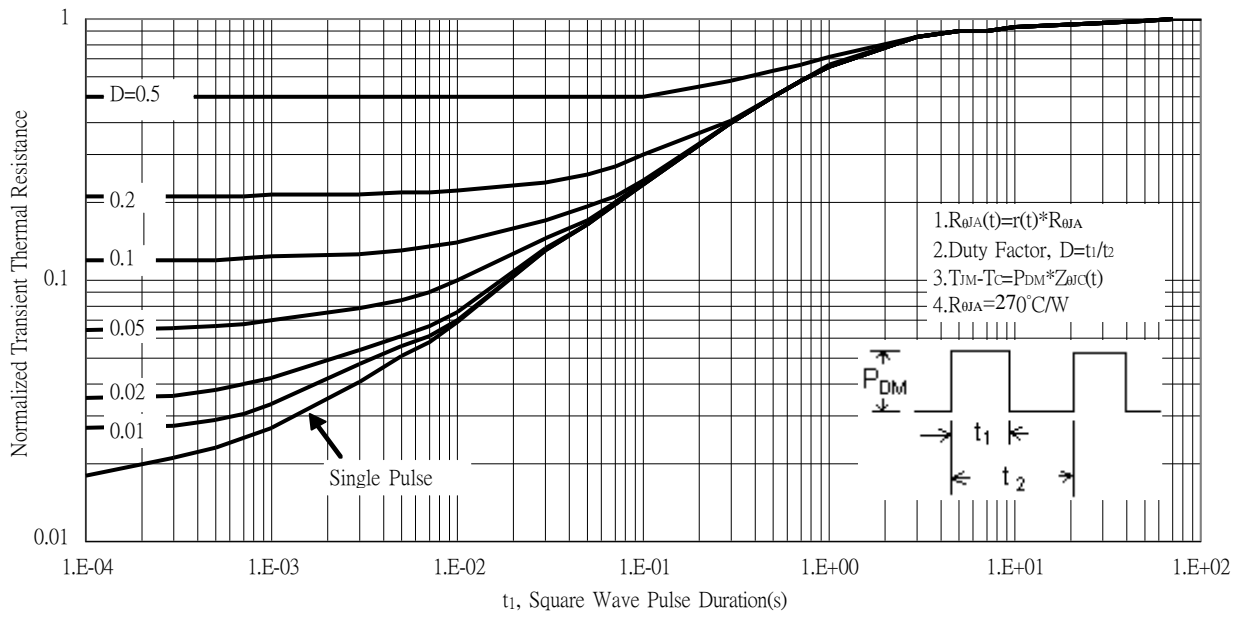


Typical Characteristics(Cont.)

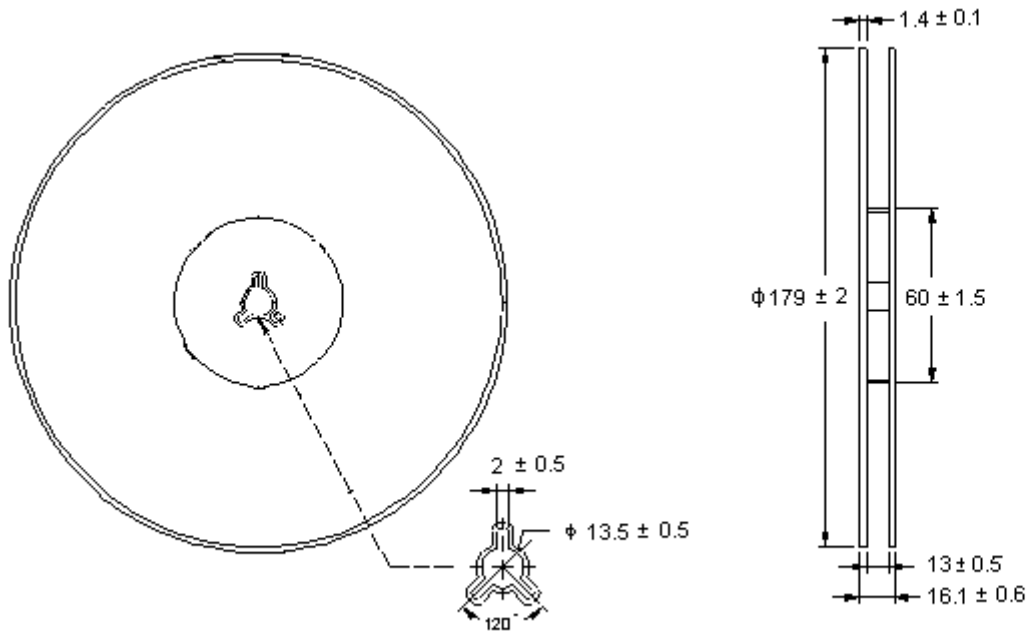
Power Derating Curve



Transient Thermal Response Curves

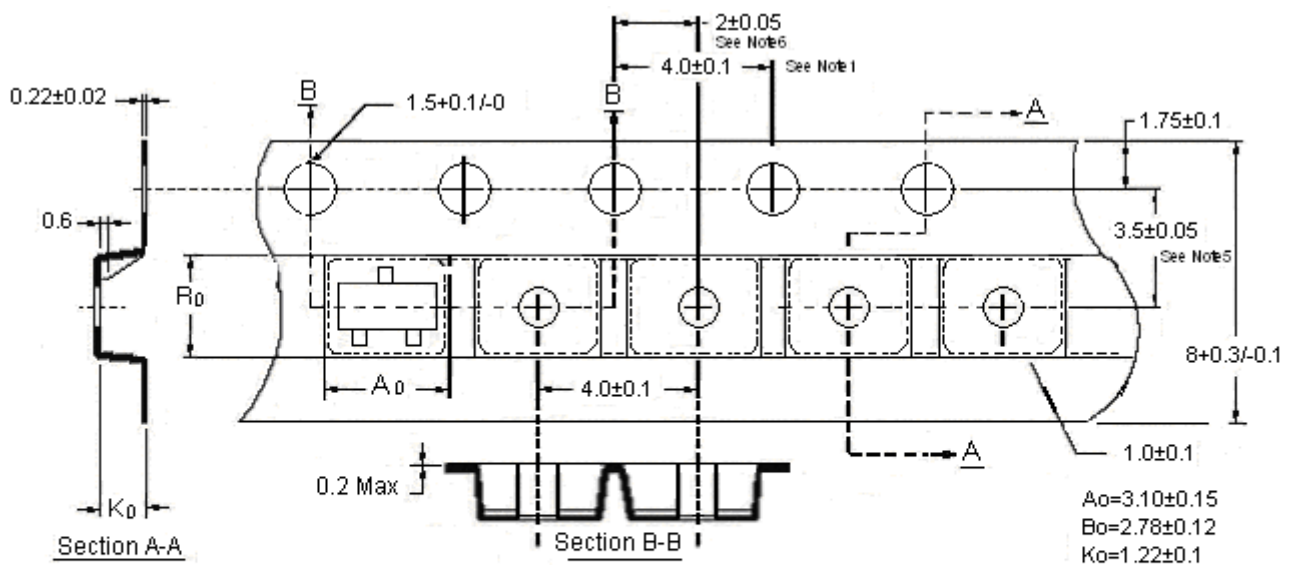


Reel Dimension



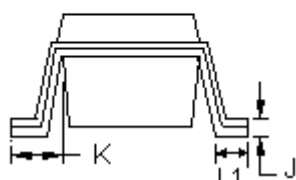
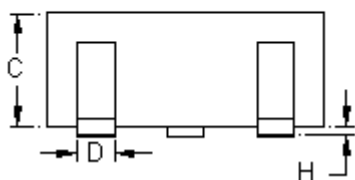
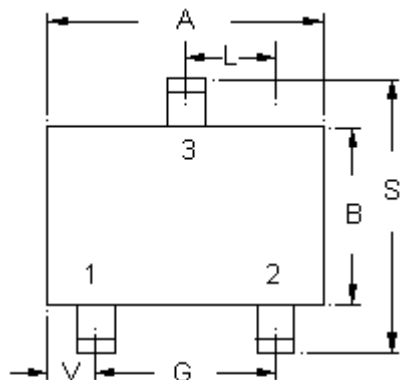
Unit: millimeter

Carrier Tape Dimension

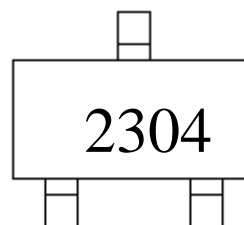


Unit: millimeter

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	0.0032	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