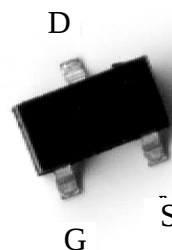


P-Channel Logic Level Enhancement Mode MOSFET

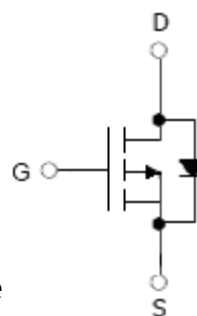
Features:

- 1.8V gate rated
- Advanced trench process technology
- High density cell design for ultra low on resistance
- Pb-free lead plating and halogen-free package

SOT-23



BV _{DSS}		-20V
I _D @V _{GS} =-4.5V, T _A =25°C		-4.9A
R _{DS(on)} (TYP)	V _{GS} =-4.5V, I _D =-4.3A	39mΩ
	V _{GS} =-2.5V, I _D =-2.5A	51mΩ
	V _{GS} =-1.8V, I _D =-2A	75mΩ



G : Gate
S : Source
D : Drain

Ordering Information

Device	Package	Shipping
KWP3413SN3	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}	-20	V
Gate-Source Voltage	V _{GS}	±12	V
Continuous Drain Current @T _A =25°C, V _{GS} =-4.5V	I _D	-4.9	A
Continuous Drain Current @T _A =70°C, V _{GS} =-4.5V	I _D	-3.9	A
Pulsed Drain Current (Note 1&2)	I _{DM}	-35	A
Maximum Power Dissipation @T _A =25°C	P _D	1.38	W
Maximum Power Dissipation @T _A =70°C		0.88	
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%

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient (Note)	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.

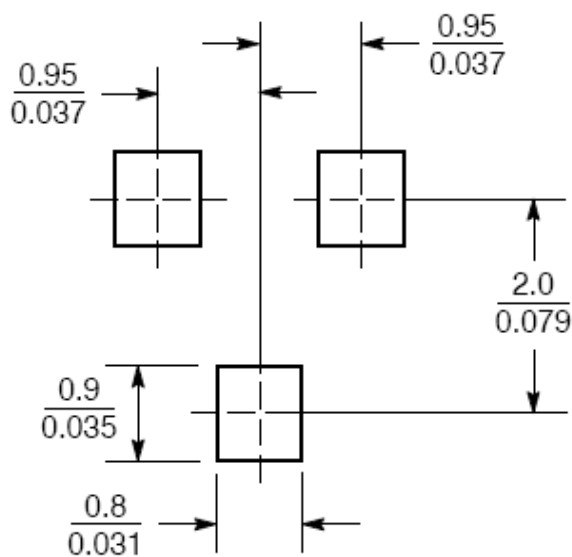
Electrical Characteristics (T_j=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	-20	-	-	V	V _{GS} =0V, I _D =-250μA
V _{GS(th)}	-0.4	-	-1.0		V _{DS} =V _{GS} , I _D =-250μA
I _{GSS}	-	-	±100	nA	V _{GS} =±12V, V _{DS} =0V
I _{DSS}	-	-	-1	μA	V _{DS} =-20V, V _{GS} =0V
	-	-	-10		V _{DS} =-20V, V _{GS} =0V, T _j =55°C
*R _{DS(ON)}	-	39	50	mΩ	V _{GS} =-4.5V, I _D =-4.3A
	-	51	65		V _{GS} =-2.5V, I _D =-2.5A
	-	75	100		V _{GS} =-1.8V, I _D =-2.0A
Dynamic					
C _{iss}	-	1220	-	pF	V _{DS} =-10V, V _{GS} =0V, f=1MHz
C _{oss}	-	103	-		
C _{rss}	-	92	-		
*t _{d(ON)}	-	12.5	-	ns	V _{DS} =-10V, I _D =-1A, V _{GS} =-4.5V, R _D =10Ω , R _G =6Ω
*t _r	-	12	-		
*t _{d(OFF)}	-	70	-		
*t _f	-	20	-		
*Q _g	-	10	-	nC	V _{DS} =-10V, I _D =-4.3A, V _{GS} =-4.5V
*Q _{gs}	-	1.9	-		
*Q _{gd}	-	2.7	-		

Source-Drain Diode					
*I _{SD}	-	-	-1.3	A	
*I _{SM}	-	-	-35		
*V _{SD}	-	-0.76	-1	V	V _{GS} =0V, I _S =-1.3A
*t _{rr}	-	23	-	ns	I _S =-1.3A, V _{GS} =0V, dI/dt=100A/μs
*Q _{rr}	-	8.5	-	nC	

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

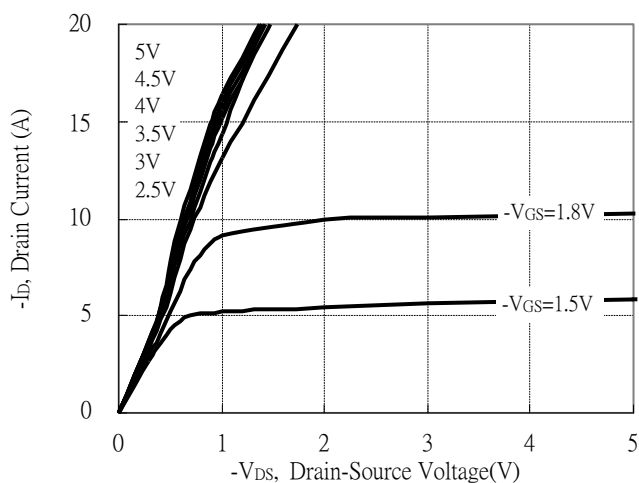
Recommended Soldering Footprint



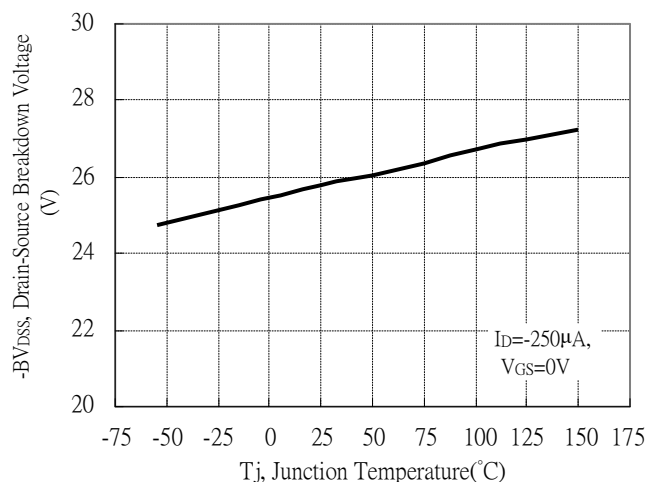
Unit : $\frac{\text{mm}}{\text{inches}}$

Typical Characteristics

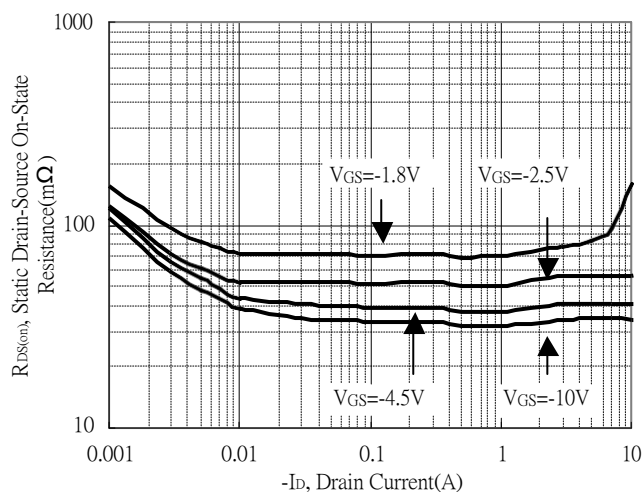
Typical Output Characteristics



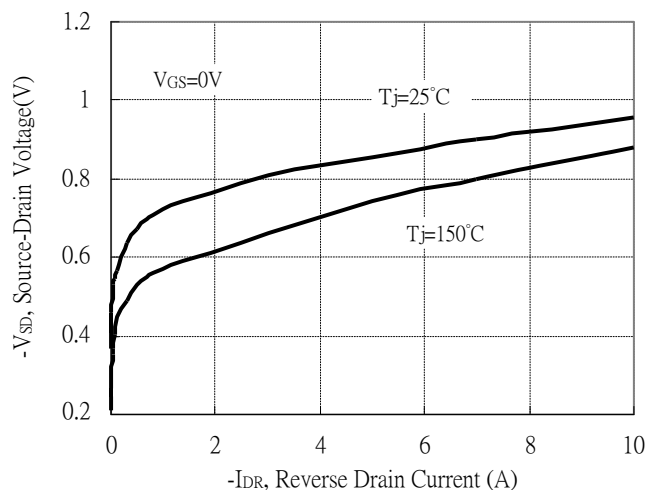
Breakdown Voltage vs Ambient Temperature



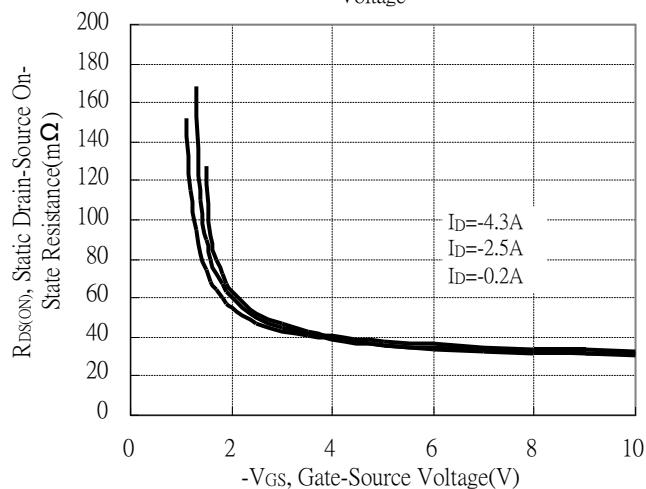
Static Drain-Source On-State resistance vs Drain Current



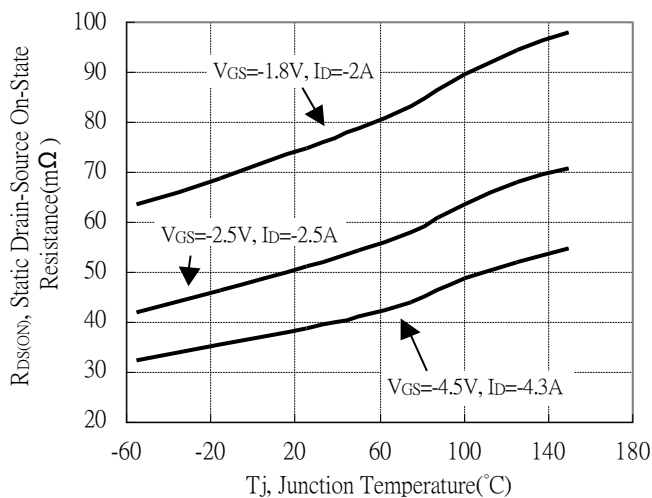
Reverse Drain Current vs Source-Drain Voltage



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

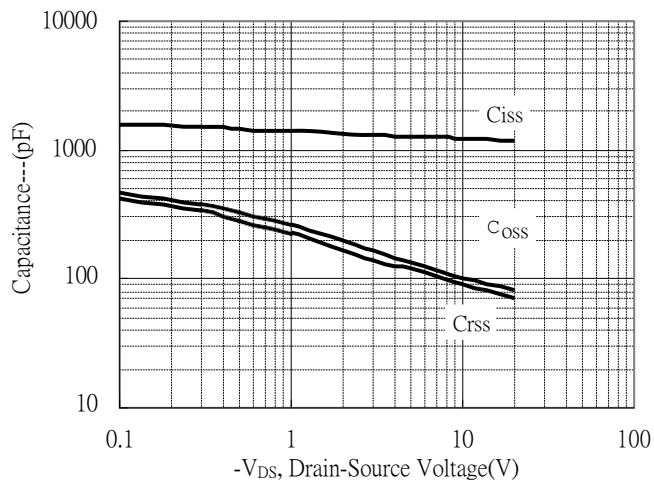


Drain-Source On-State Resistance vs Junction Temperature

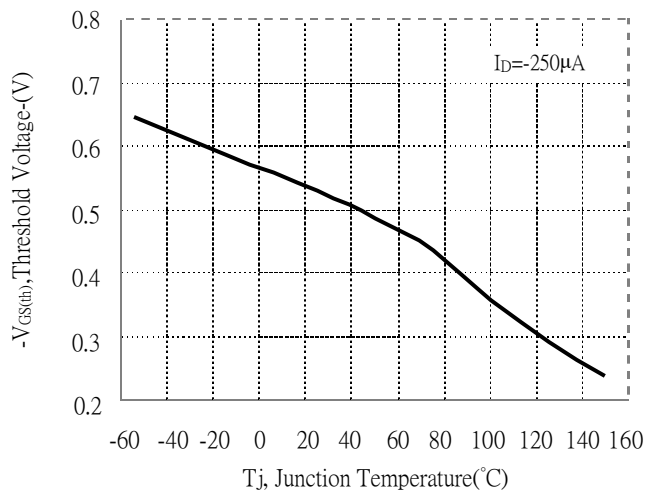


Typical Characteristics(Cont.)

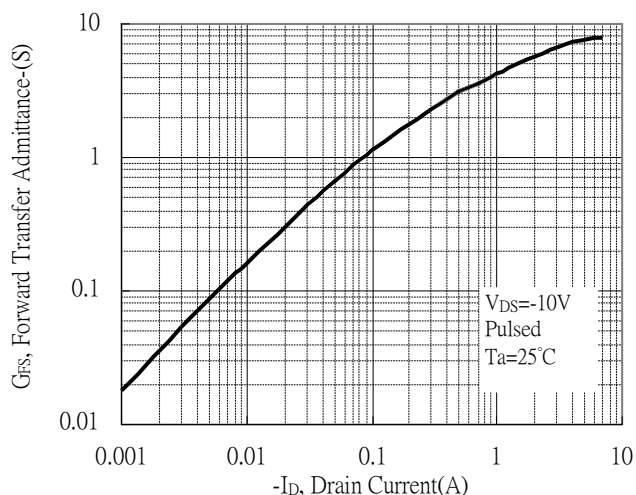
Capacitance vs Drain-to-Source Voltage



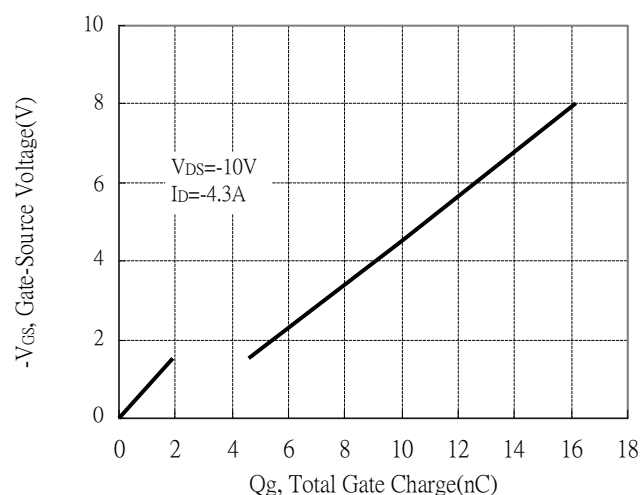
Threshold Voltage vs Junction Temperature



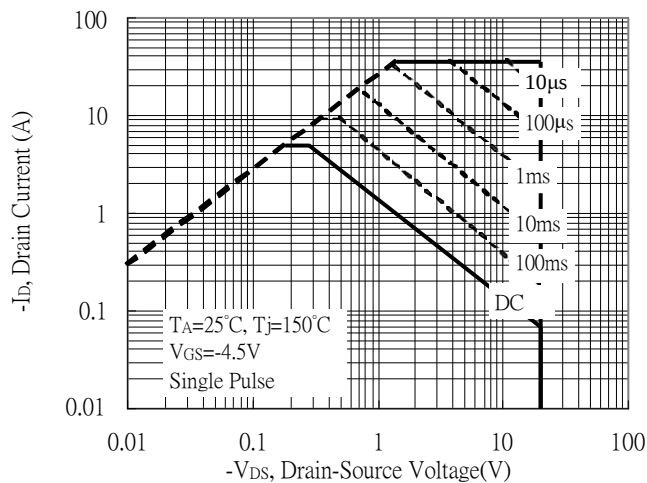
Forward Transfer Admittance vs Drain Current



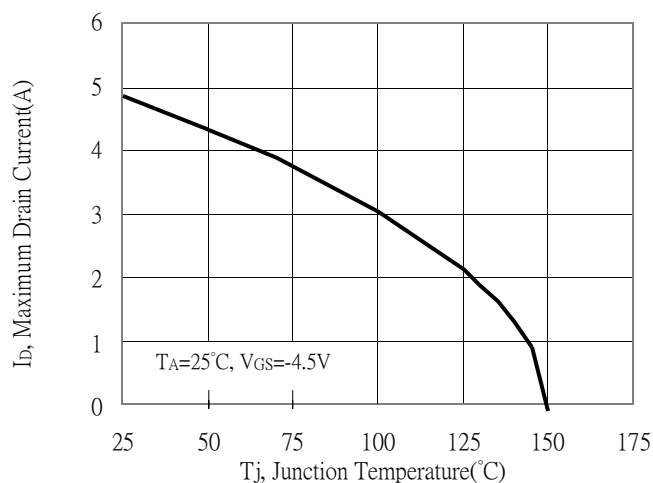
Gate Charge Characteristics



Maximum Safe Operating Area

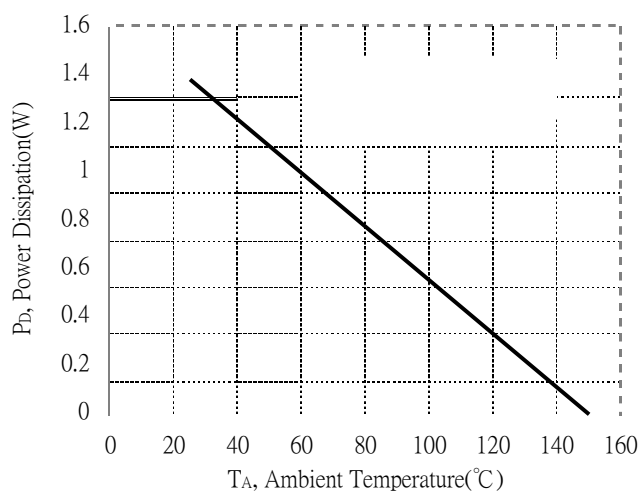


Maximum Drain Current vs Junction Temperature

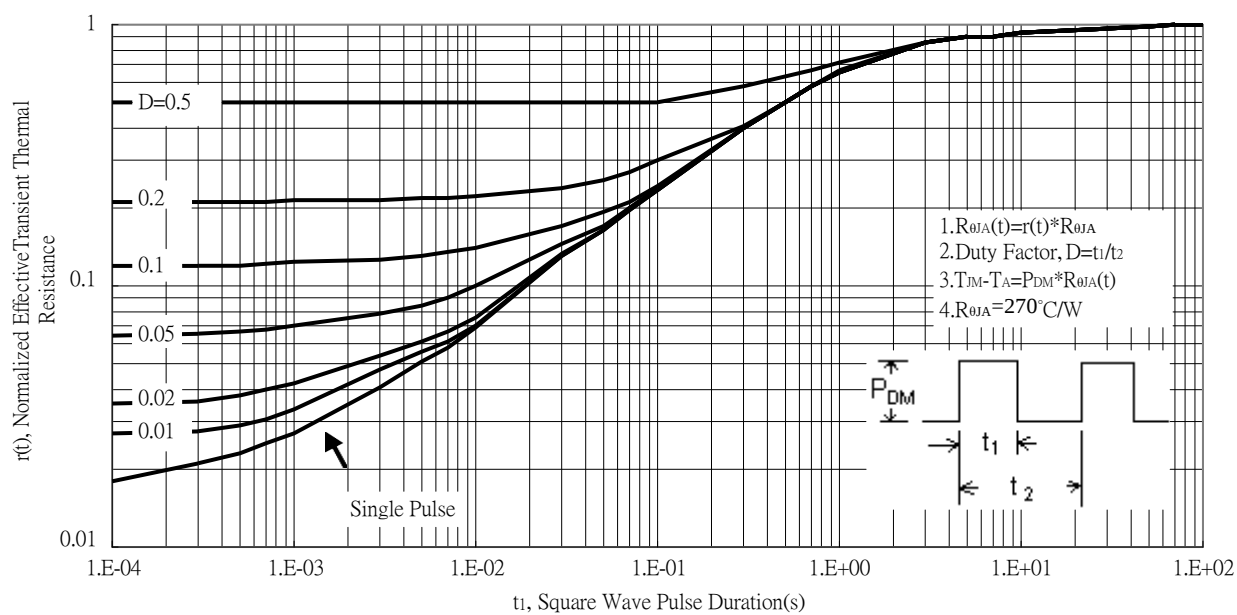


Typical Characteristics(Cont.)

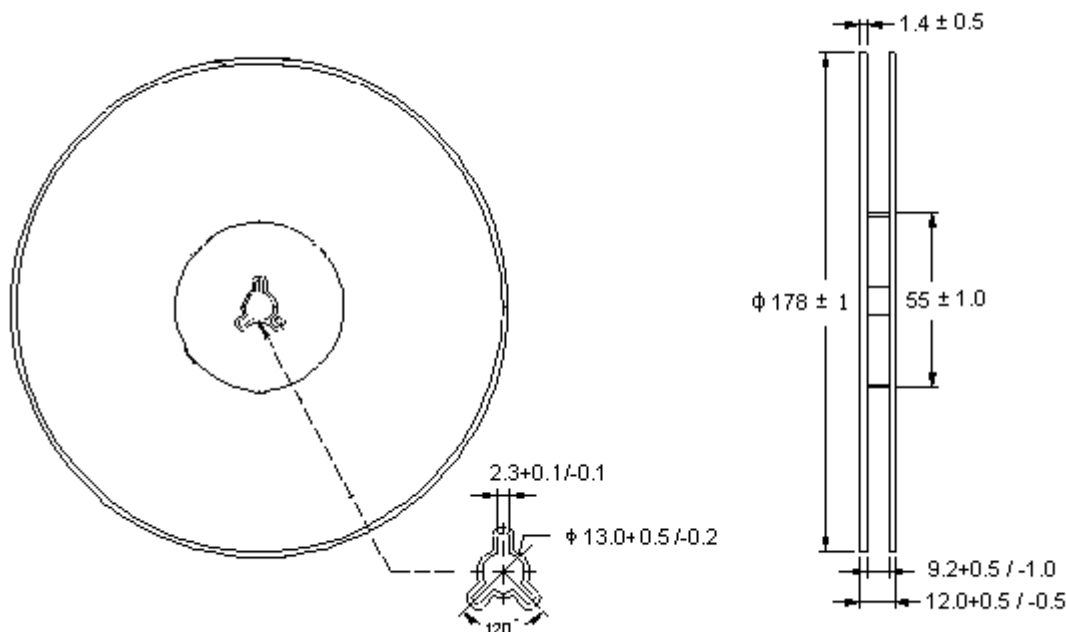
Power Derating Curve



Transient Thermal Response Curves

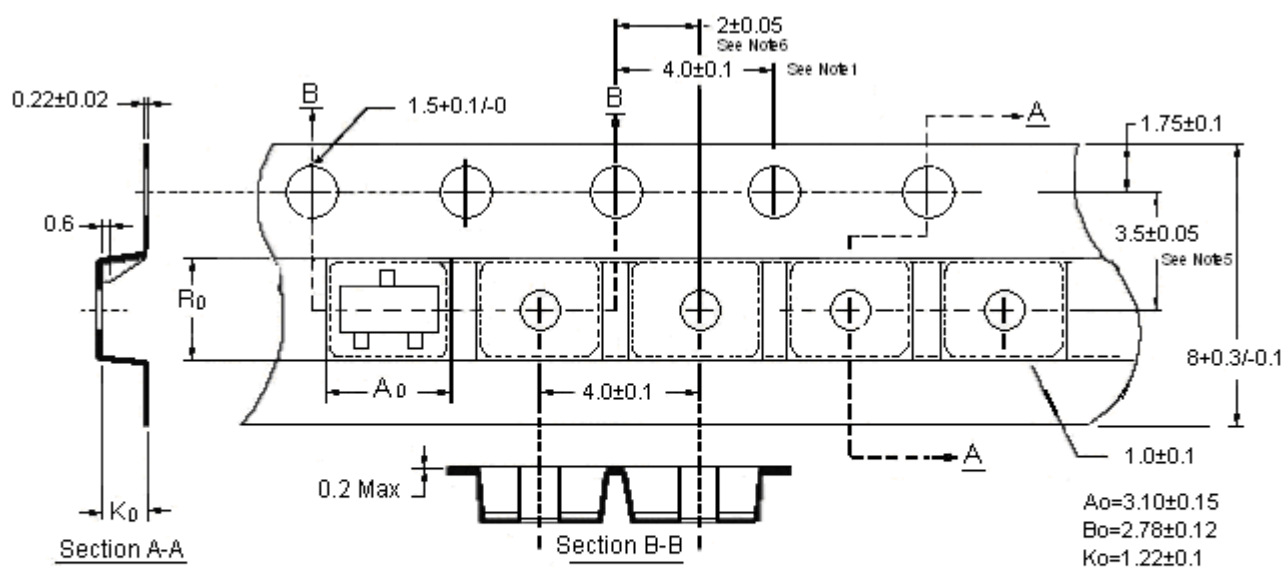


Reel Dimension

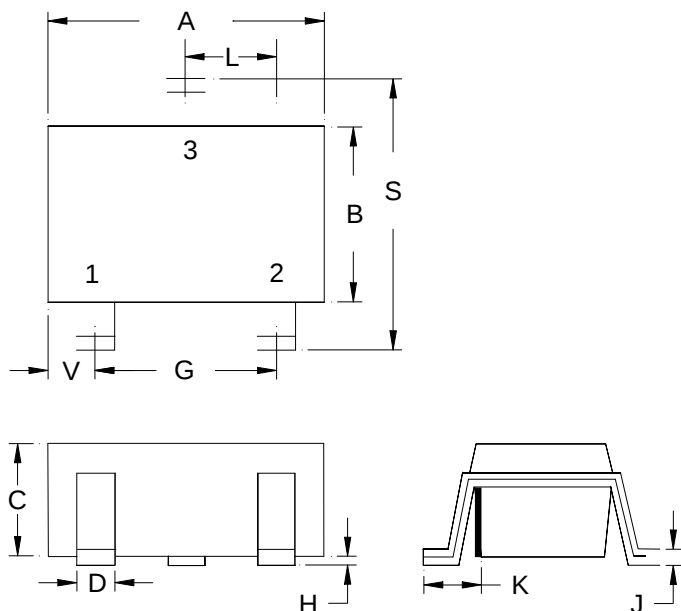


Unit: millimeter

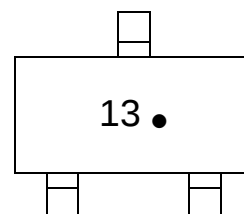
Carrier Tape Dimension



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					