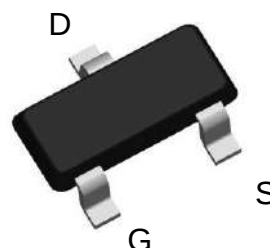


P-Channel Enhancement Mode Power MOSFET

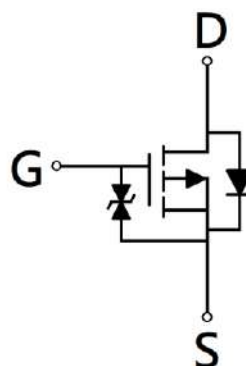
Features:

- Low On Resistance
- Low Gate Charge
- Fast Switching Characteristic
- ESD protected gate, typical 4kV (HBM)

SOT-23



BV_{DSS}	-30V
$I_D @ V_{GS} = -4.5V, T_A = 25^\circ C$	-0.56A
$R_{DS(ON)} \text{ typ. @ } V_{GS} = -4.5V, I_D = -0.2A$	0.9Ω
$R_{DS(ON)} \text{ typ. @ } V_{GS} = -2.5V, I_D = -0.2A$	1.1Ω
$R_{DS(ON)} \text{ typ. @ } V_{GS} = -1.8V, I_D = -10mA$	1.3Ω



G : Gate S : Source D : Drain

Ordering Information

Device	Package	Shipping
KNS1K0P03E	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

Absolute Maximum Ratings (T_A=25°C)

Parameter		Symbol	Limits	Unit
Drain-Source Voltage		V _{DS}	-30	V
Gate-Source Voltage		V _{GS}	±8	
Continuous Drain Current @ V _{GS} =-4.5V, T _A =25°C		I _D	-0.56	A
Continuous Drain Current @ V _{GS} =-4.5V, T _A =70°C			-0.45	
Pulsed Drain Current *a		I _{DM}	-2.2	
Continuous Body Diode Forward Current @ T _A =25°C		I _S	-0.56	
ESD susceptibility *b		V _{ESD}	4000	V
Total Power Dissipation	T _A =25°C	P _D	0.69	W
	T _A =70°C		0.44	
Operating Junction and Storage Temperature Range		T _J , T _{stg}	-55~+150	°C

Thermal Data

Parameter	Symbol	Steady State	Unit
Thermal Resistance, Junction-to-ambient	R _{θJA}	181	°C/W

Note:

*a. Repetitive rating, pulse width limited by junction temperature T_J(MAX)=150°C. Ratings are based on low frequency and low duty cycles to keep initial T_J=25°C.

*b. Human body model, 1.5kΩ in series with 100pF

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	-30	-	-	V	V _{GS} =0V, I _D =-250μA
V _{GS(th)}	-0.4	-	-1.2		V _{DS} =V _{GS} , I _D =-250μA
G _{FS}	-	0.8	-	S	V _{DS} =-5V, I _D =-0.2A
I _{GSS}	-	-	±10	μA	V _{GS} =±8V, V _{DS} =0V
I _{DSS}	-	-	-1		V _{DS} =-24V, V _{GS} =0V
R _{DS(ON)}	-	0.9	1.3	Ω	V _{GS} =-4.5V, I _D =-0.2A
	-	1.1	1.7		V _{GS} =-2.5V, I _D =-0.2A
	-	1.3	2.7		V _{GS} =-1.8V, I _D =-10mA
Dynamic					
C _{iss}	-	46	-	pF	V _{DS} =-15V, V _{GS} =0V, f=1MHz
C _{oss}	-	13	-		
C _{rss}	-	10	-		
Q _g *1, 2	-	1	-	nC	V _{DS} =-20V, I _D =-0.4A, V _{GS} =-4.5V
Q _{gs} *1, 2	-	0.2	-		
Q _{gd} *1, 2	-	0.2	-		
t _{d(ON)} *1, 2	-	13	-	ns	V _{DS} =-15V, I _D =-0.4A, V _{GS} =-4.5V, R _{GS} =1Ω
t _r *1, 2	-	21	-		
t _{d(OFF)} *1, 2	-	44	-		
t _f *1, 2	-	29	-		
Source-Drain Diode					
V _{SD} *1	-	-0.85	-1.2	V	I _S =-0.2A, V _{GS} =0V
t _{rr}	-	25	-	ns	I _F =-0.5A, dI _F /dt=100A/μs
Q _{rr}	-	5	-	nC	

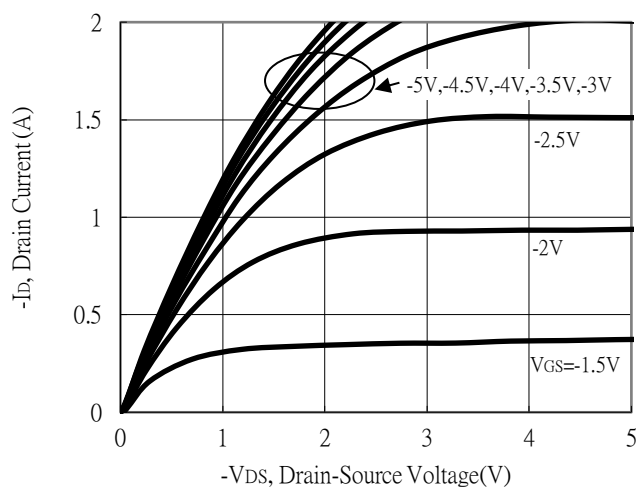
Note:

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

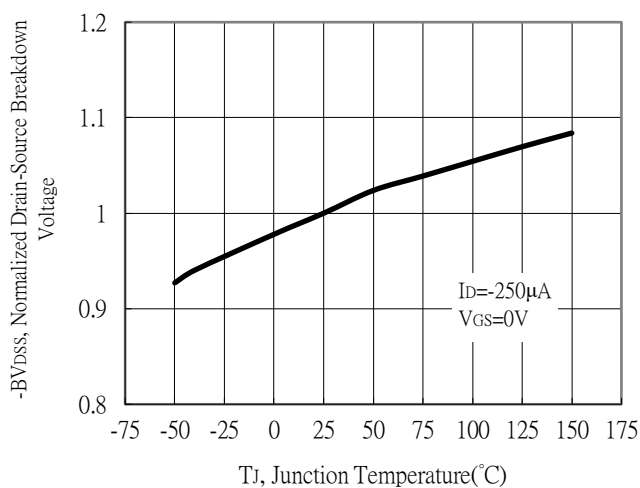
*2. Independent of operating temperature

Typical Characteristics

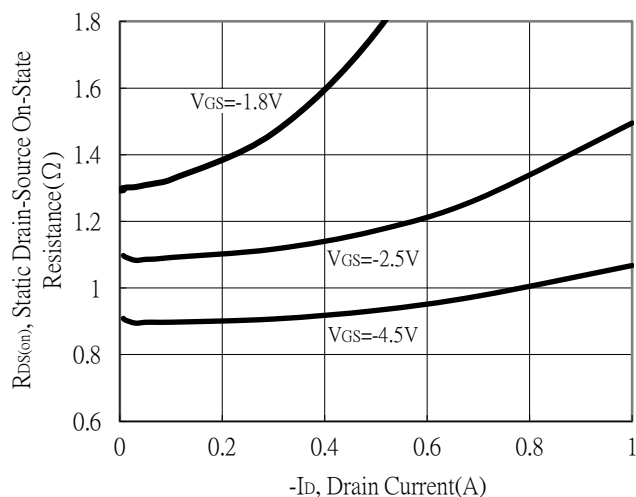
Typical Output Characteristics



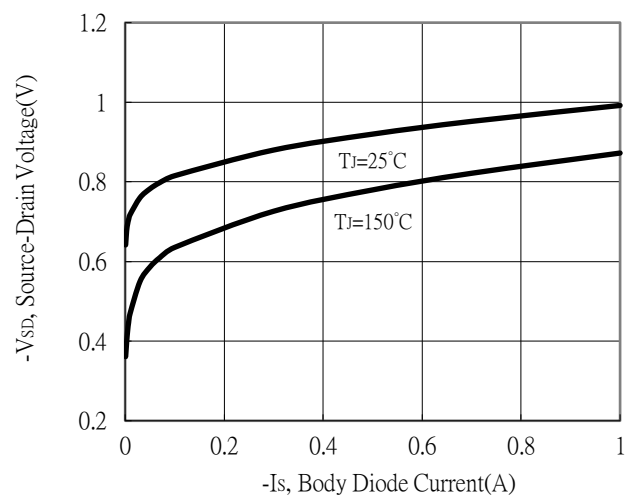
Breakdown Voltage vs Ambient Temperature



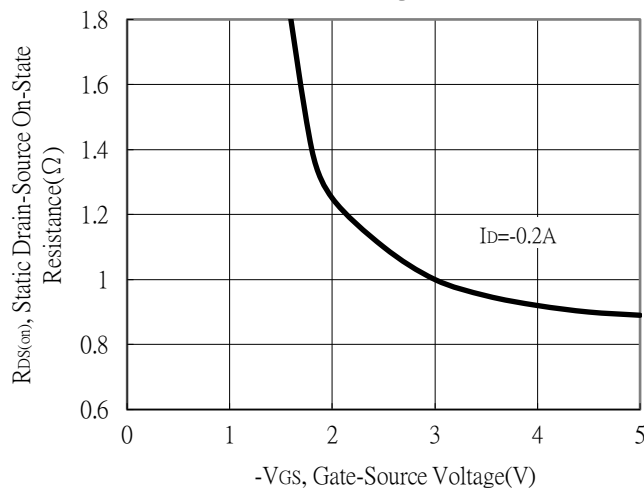
Static Drain-Source On-State resistance vs Drain Current



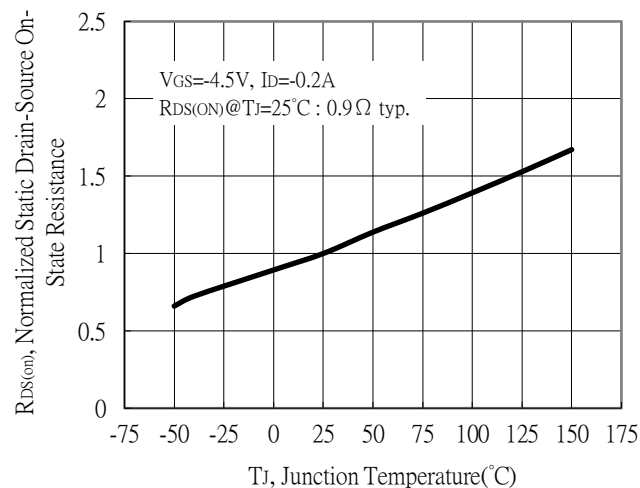
Body Diode Current vs Source-Drain Voltage



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

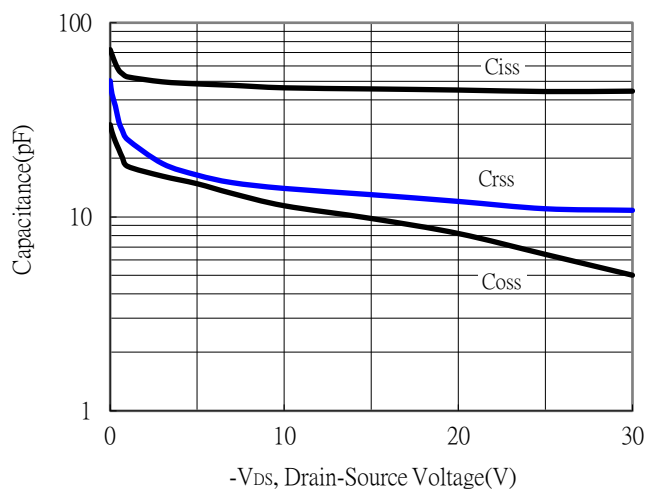


Drain-Source On-State Resistance vs Junction Temperature

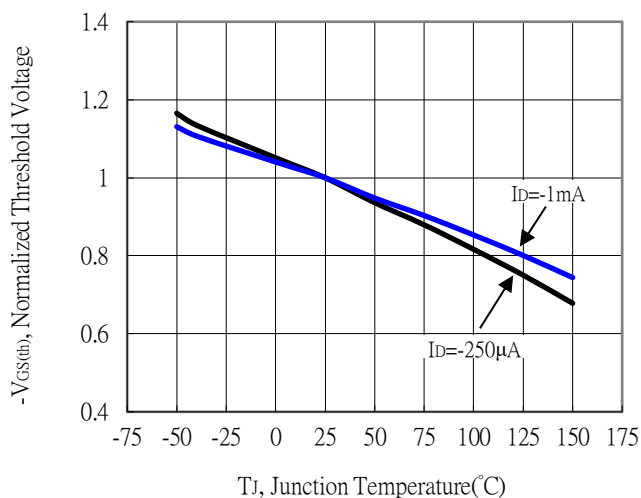


Typical Characteristics (Cont.)

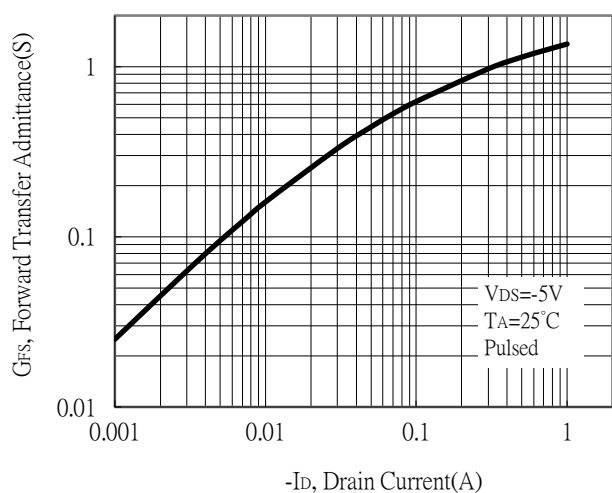
Capacitance vs Drain-to-Source Voltage



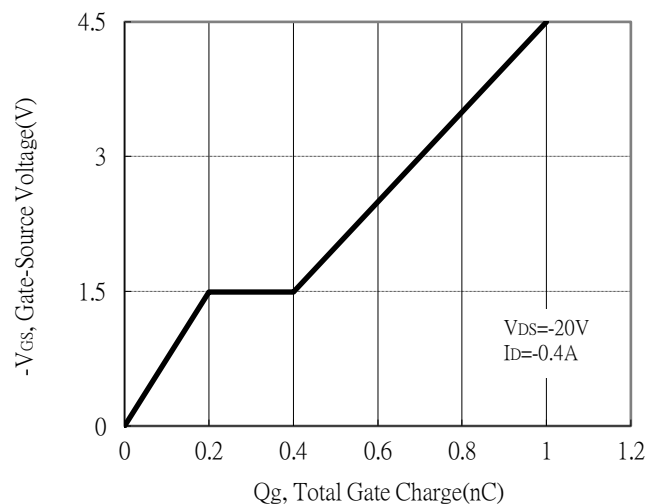
Threshold Voltage vs Junction Temperature



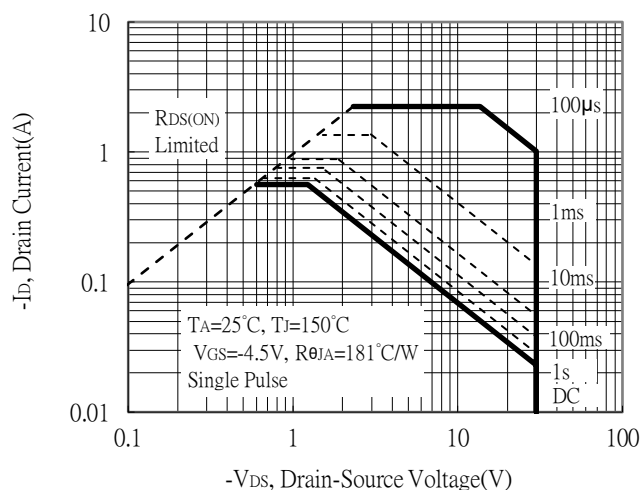
Forward Transfer Admittance vs Drain Current



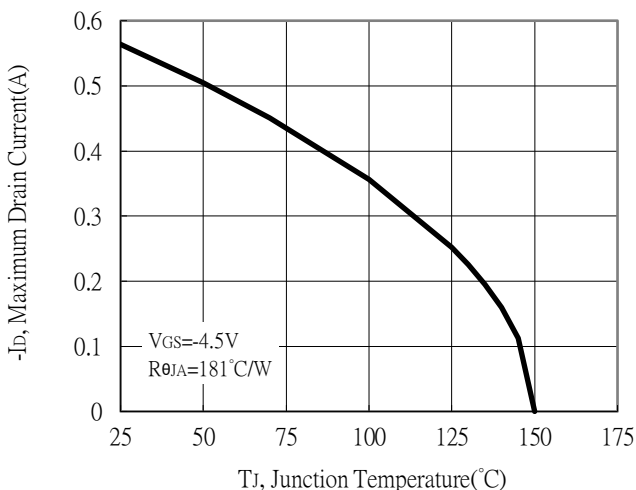
Gate Charge Characteristics



Maximum Safe Operating Area

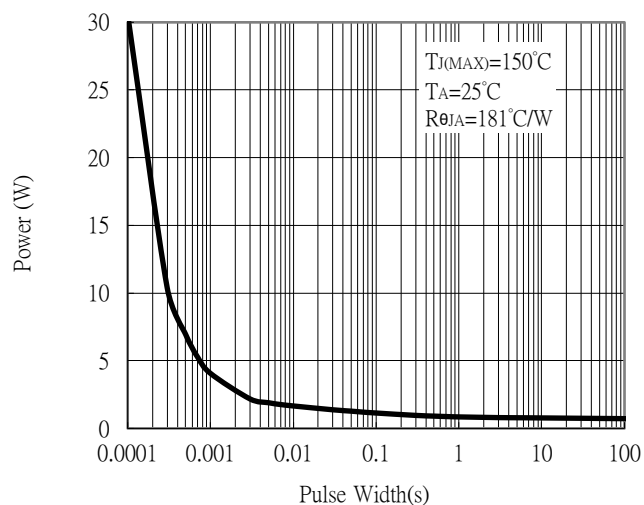


Maximum Drain Current vs Junction Temperature

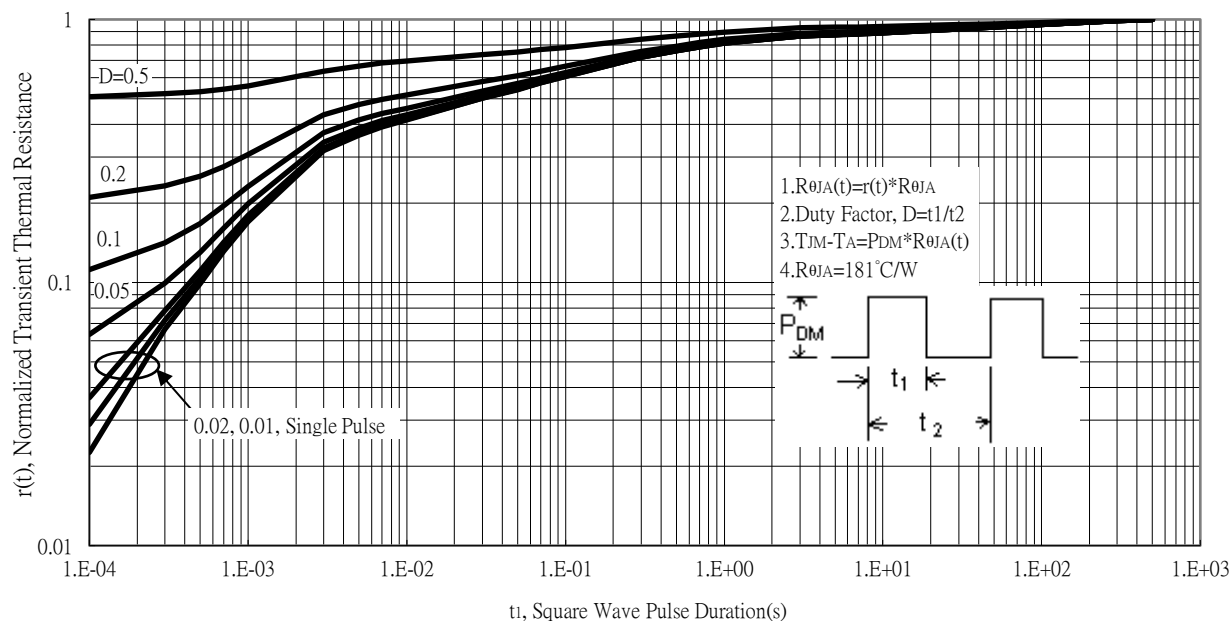


Typical Characteristics (Cont.)

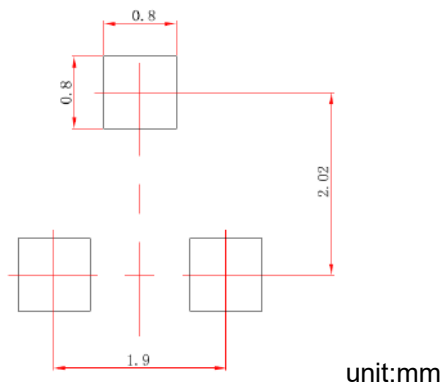
Single Pulse Power Rating, Junction to Ambient



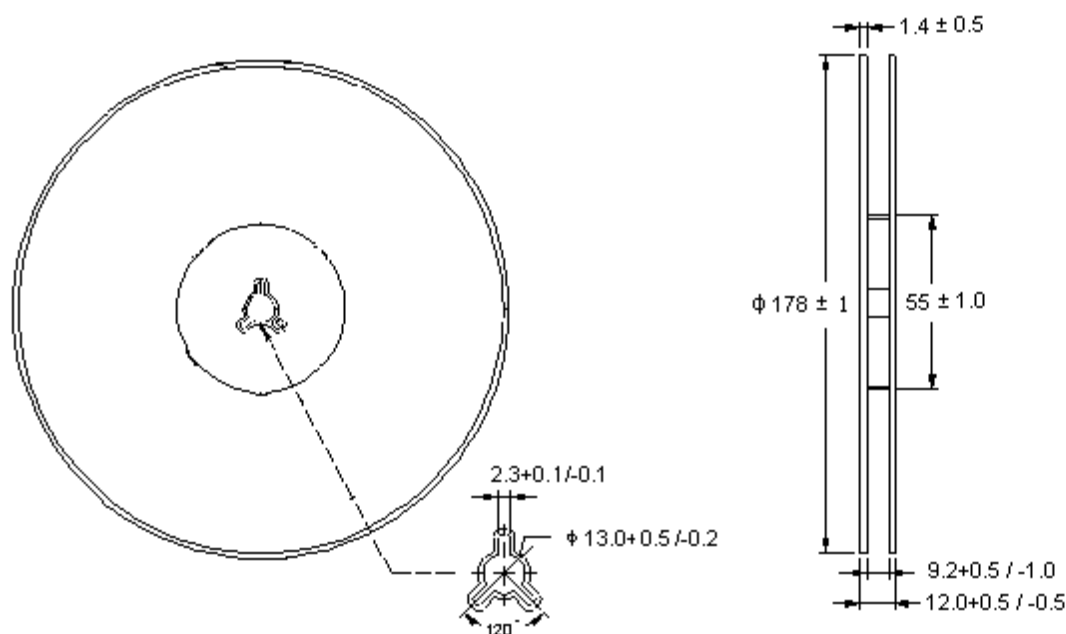
Transient Thermal Response Curves



Recommended Soldering Footprint

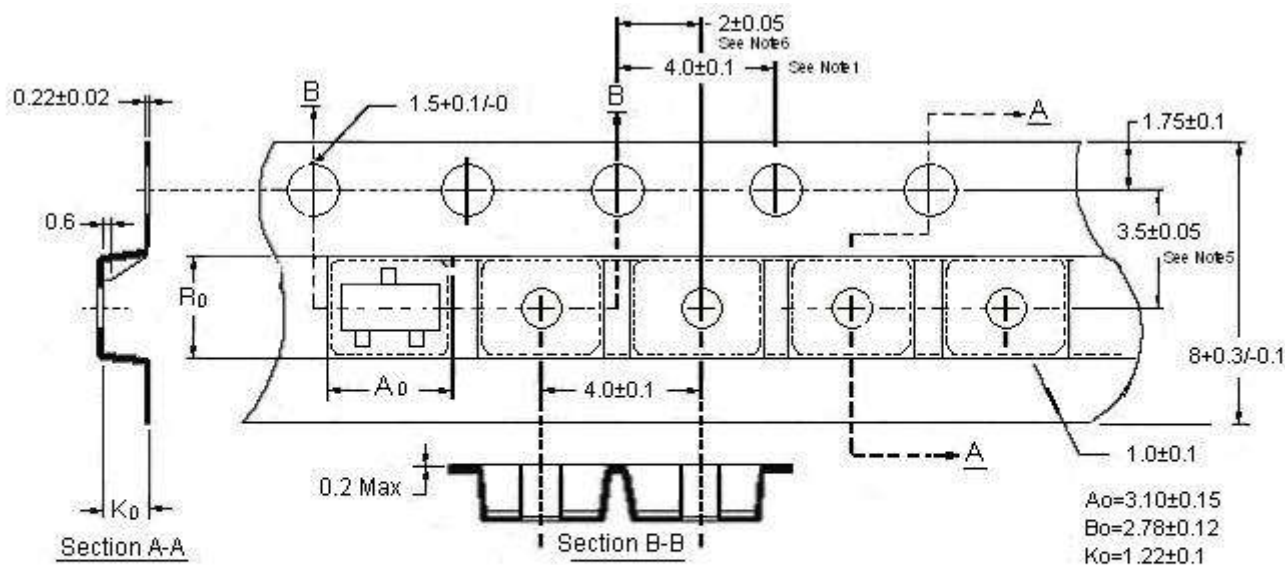


Reel Dimension



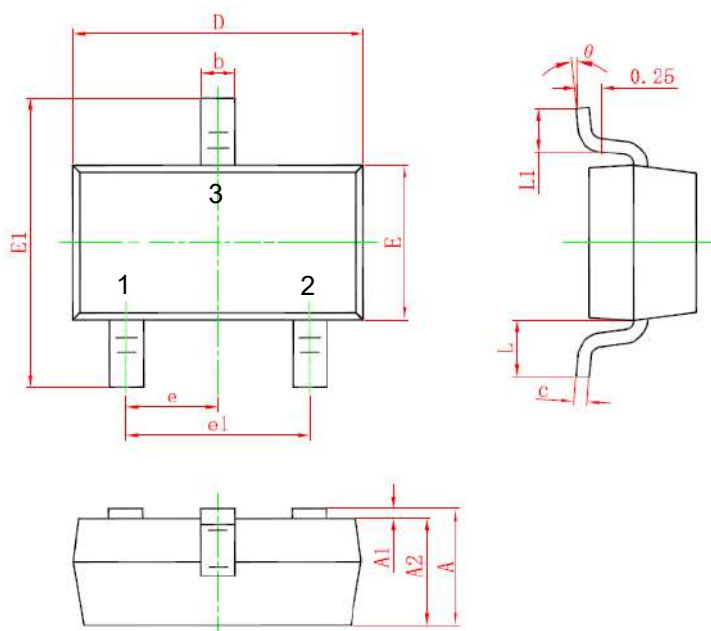
Unit: millimeter

Carrier Tape Dimension

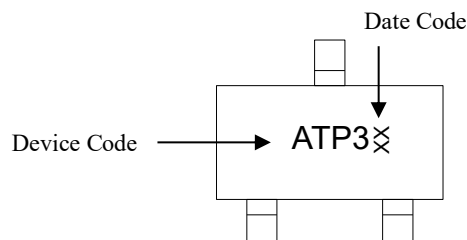


Unit : millimeter

SOT-23 Dimension



Marking:



3-Lead SOT-23 Plastic
Surface Mounted Package

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

Date Code: Year+Month
 Year: 3→2003, 4→2004
 Month: 1→1, 2→2, . . .
 9→9, A→10, B→11, C→12

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.035	0.045	0.900	1.150	E1	0.089	0.100	2.250	2.550
A1	0.000	0.004	0.000	0.100	e	0.037 TYP		0.950 TYP	
A2	0.035	0.041	0.900	1.050	e1	0.071	0.079	1.800	2.000
b	0.012	0.020	0.300	0.500	L	0.022 REF		0.550 REF	
c	0.003	0.006	0.080	0.150	L1	0.012	0.020	0.300	0.500
D	0.110	0.118	2.800	3.000	θ	0°	8°	0°	8°
E	0.047	0.055	1.200	1.400					