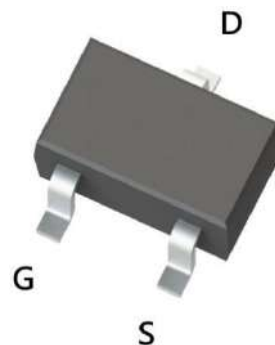


P-Channel Enhancement Mode MOSFET

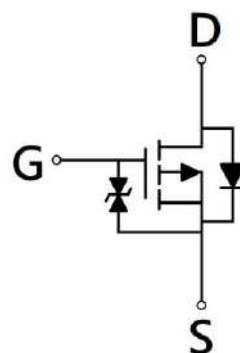
Features:

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

SOT-323



BV_{DSS}	-20V
$I_D @ V_{GS} = -4.5V, T_A = 25^\circ C$	-0.5A
$R_{DS(ON)} \text{ typ.} @ V_{GS} = -4.5V, I_D = -0.2A$	0.75Ω
$R_{DS(ON)} \text{ typ.} @ V_{GS} = -2.5V, I_D = -0.2A$	0.9Ω
$R_{DS(ON)} \text{ typ.} @ V_{GS} = -1.8V, I_D = -10mA$	1.1Ω



G : Gate S : Source D : Drain

Ordering Information

Device	Package	Shipping
KWA600P02KE	SOT-323 (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}	-20	V
Gate-Source Voltage	V _{GS}	±8	
Continuous Drain Current @ V _{GS} =-4.5V, T _A =25°C	I _D	-0.5	A
Continuous Drain Current @ V _{GS} =-4.5V, T _A =70°C		-0.4	
Pulsed Drain Current *a	I _{DM}	-2	
Continuous Body Diode Forward Current @ T _A =25°C	I _S	-0.4	
Pulsed Body Diode Forward Current	I _{SM}	-1.6	
ESD susceptibility *b	V _{ESD}	4000	V
Total Power Dissipation	P _D	T _A =25°C 0.49	W
		T _A =70°C 0.31	
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}	257	°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}	-20	-	-	V	V _{GS} =0V, I _D =-250μA
V _{GS(th)}	-0.4	-	-1.2		V _{DS} =V _{GS} , I _D =-250μA
G _{FS}	-	1	-	S	V _{DS} =-5V, I _D =-0.4A
I _{GSS}	-	-	±10	μA	V _{GS} =±8V, V _{DS} =0V
I _{DSS}	-	-	-1		V _{DS} =-16V, V _{GS} =0V
R _{DS(ON)}	-	0.75	1.1	Ω	V _{GS} =-4.5V, I _D =-0.2A
	-	0.9	1.5		V _{GS} =-2.5V, I _D =-0.2A
	-	1.1	2.5		V _{GS} =-1.8V, I _D =-10mA
Dynamic					
C _{iss}	-	45	-	pF	V _{DS} =-10V, V _{GS} =0V, f=1MHz
C _{oss}	-	15	-		
C _{rss}	-	8	-		
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	-	11	-	ns	V _{DS} =-10V, I _D =-0.2A, V _{GS} =-4.5V, R _{GS} =10Ω
t _r *1, 2	-	20	-		
t _{d(OFF)} *1, 2	-	45	-		
t _f *1, 2	-	35	-		
Source-Drain Diode					
V _{SD} *1	-	-0.9	-1.2	V	I _S =-0.4A, V _{GS} =0V

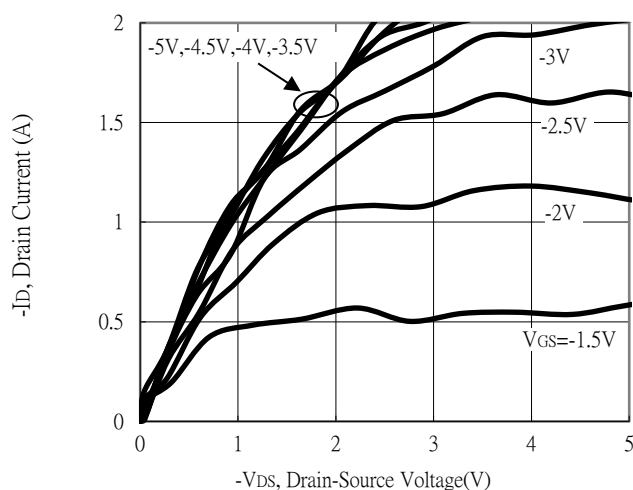
Note:

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

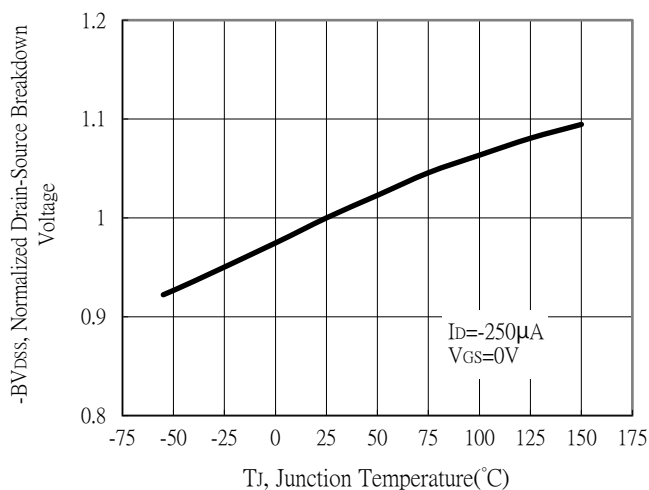
*2. Independent of operating temperature

Typical Characteristics

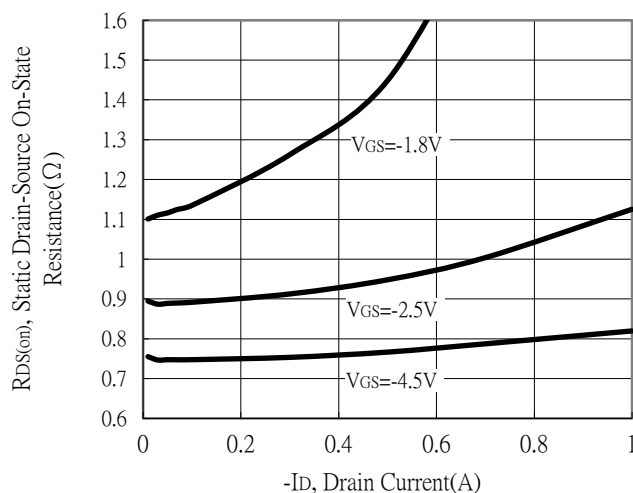
Typical Output Characteristics



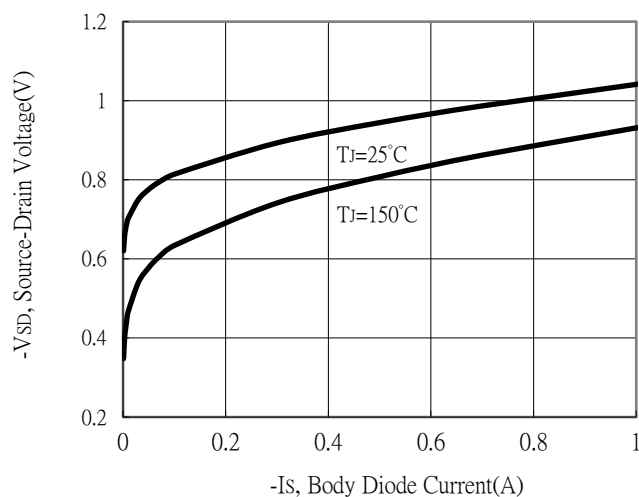
Breakdown Voltage vs Junction Temperature



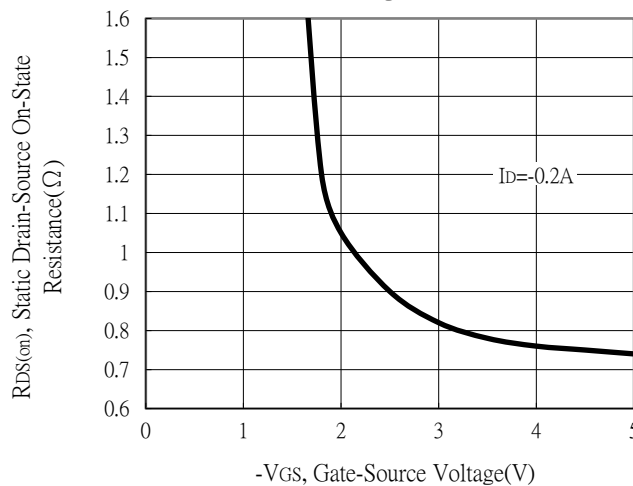
Static Drain-Source On-State resistance vs Drain Current



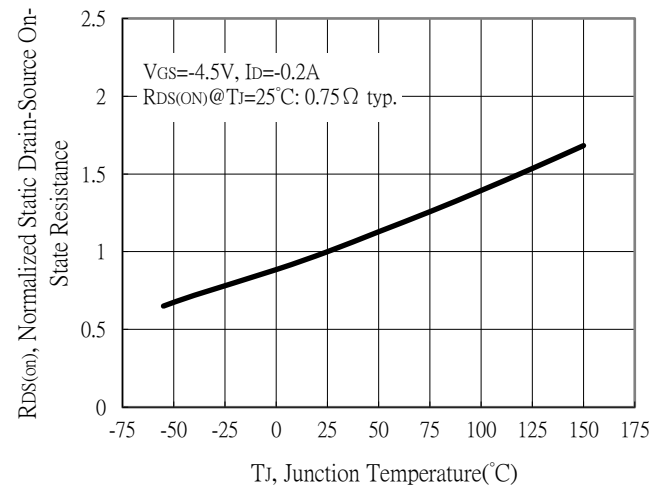
Body Diode Current vs Source-Drain Voltage



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

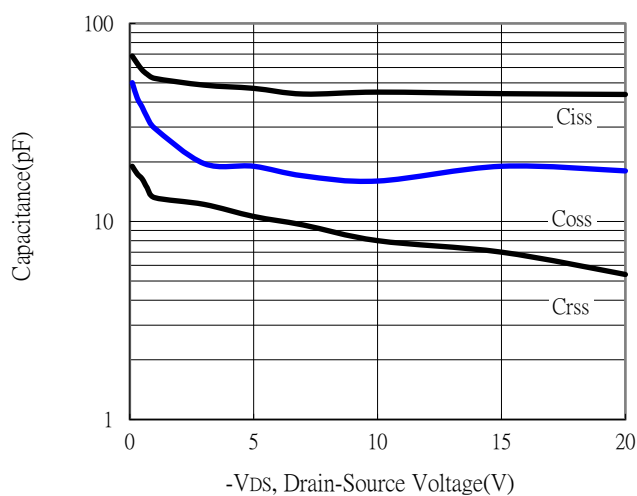


Drain-Source On-State Resistance vs Junction Temperature

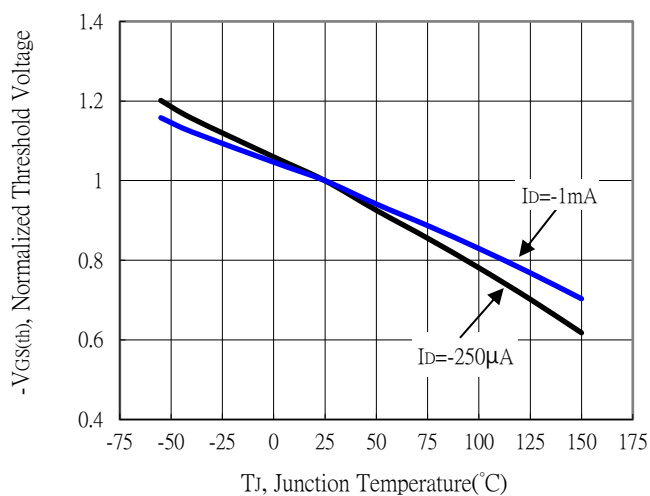


Typical Characteristics (Cont.)

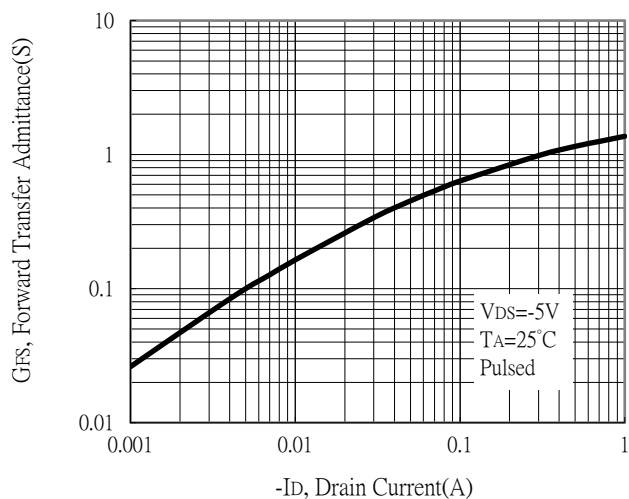
Capacitance vs Drain-to-Source Voltage



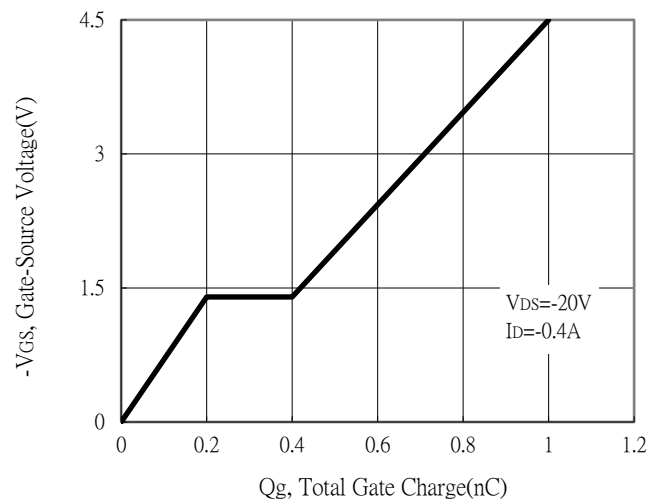
Threshold Voltage vs Junction Temperature



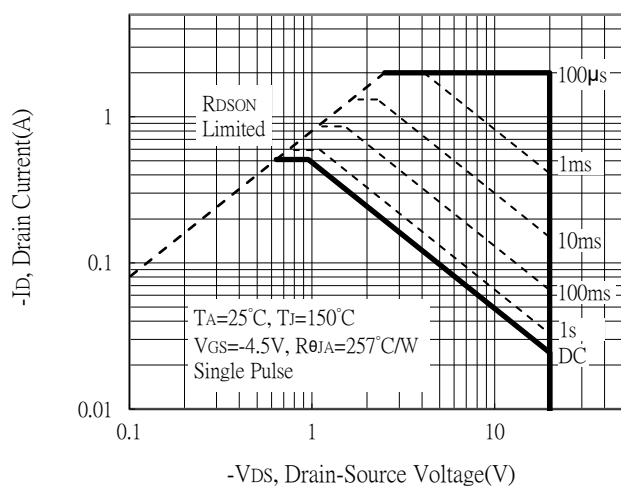
Forward Transfer Admittance vs Drain Current



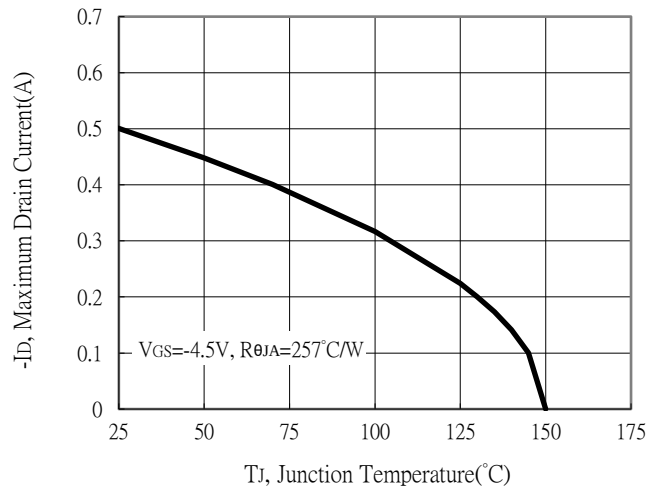
Gate Charge Characteristics



Maximum Safe Operating Area

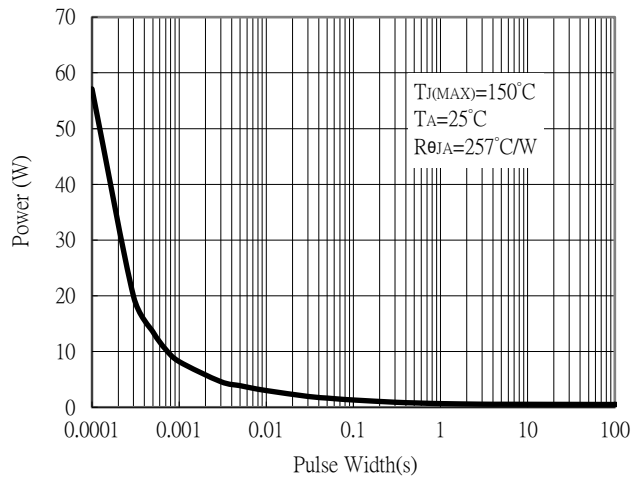


Maximum Drain Current vs Junction Temperature

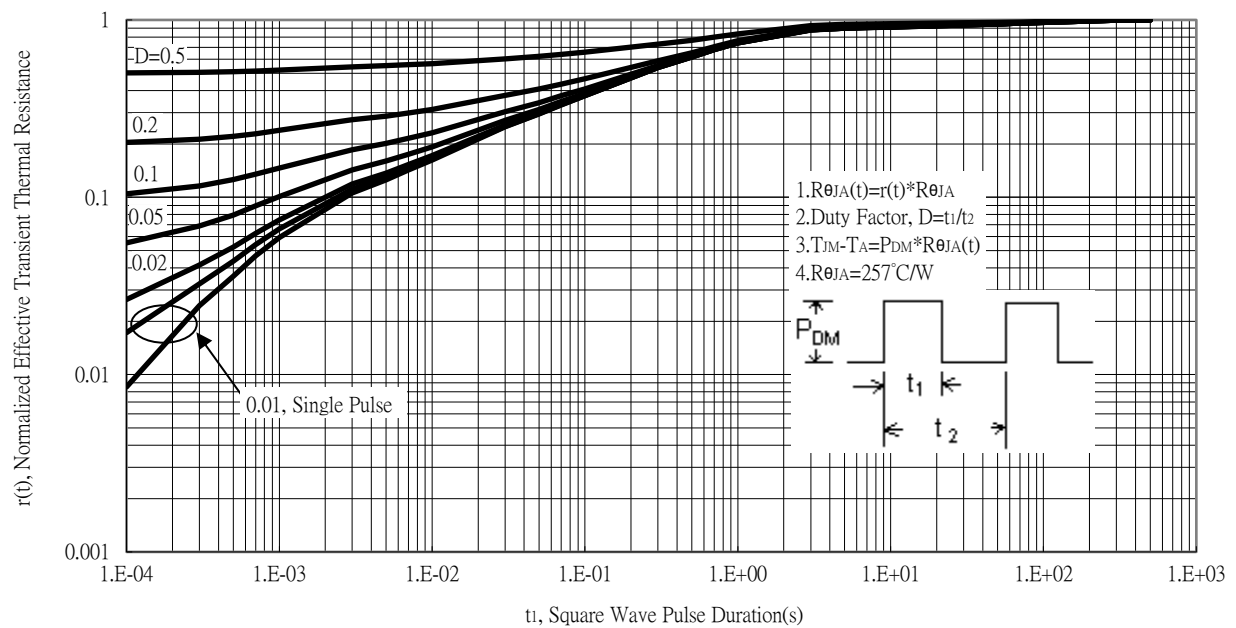


Typical Characteristics (Cont.)

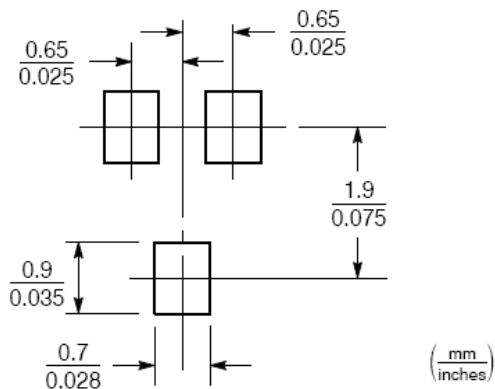
Single Pulse Power Rating, Junction to Ambient



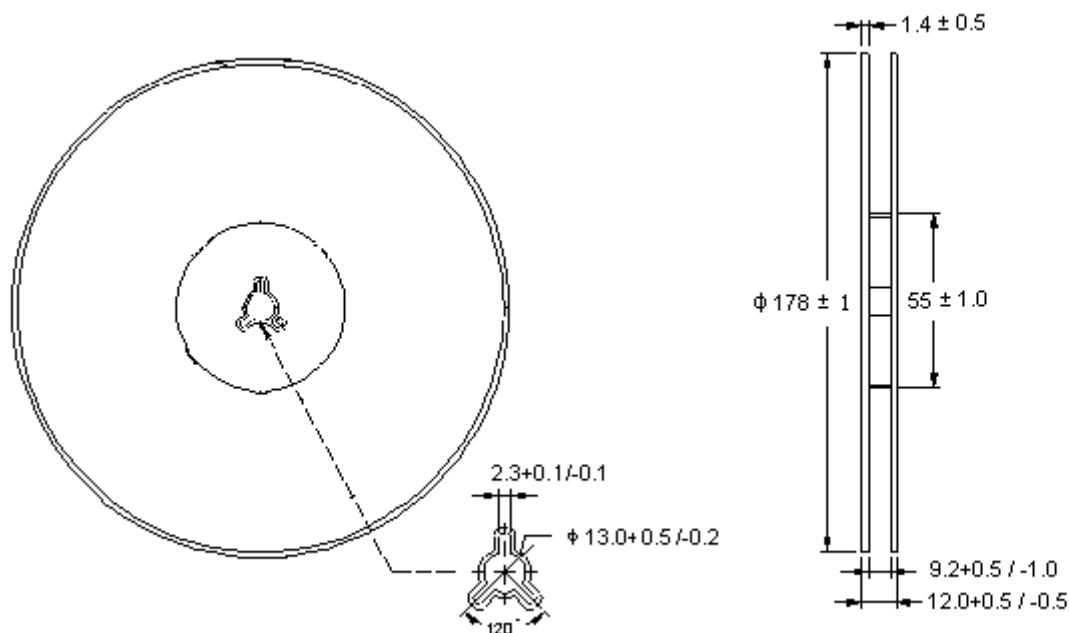
Transient Thermal Response Curves



Recommended Soldering Footprint

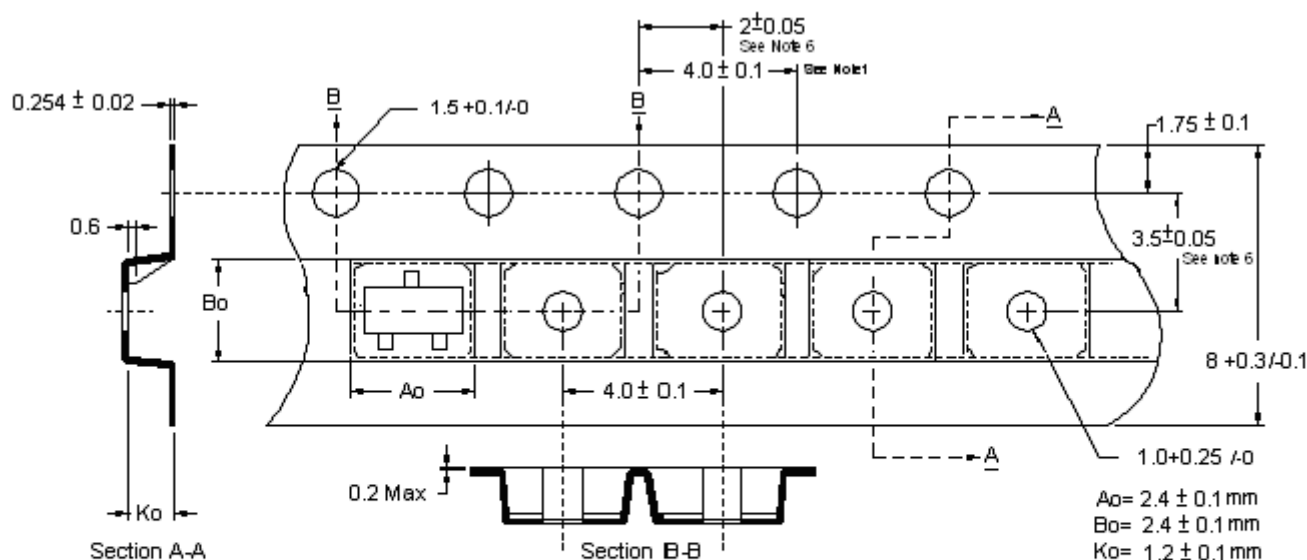


Reel Dimension



Unit: millimeter

Carrier Tape Dimension

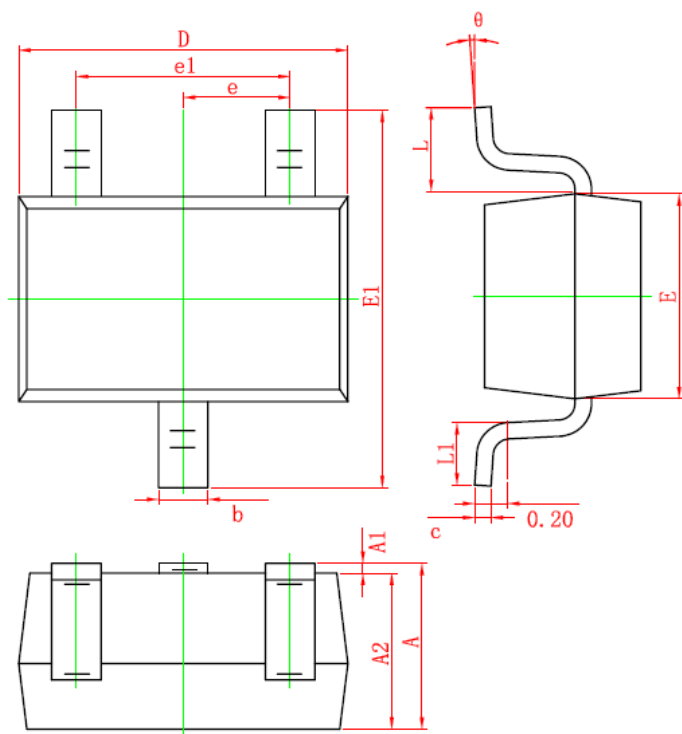


Notes

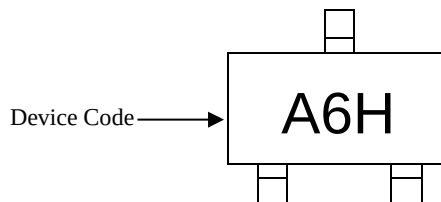
1. 10 sprocket hole pitch cumulative tolerance ± 0.2 .
2. Camber not to exceed 1mm in 100mm.
3. Material: Conductive Black Advantek Polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Unit : millimeter

SOT-323 Dimension



Marking:



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

3-Lead SOT-323 Plastic
Surface Mounted Package

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043	E1	2.150	2.450	0.085	0.096
A1	0.000	0.100	0.000	0.004	e	0.650	TYP	0.026	TYP
A2	0.900	1.000	0.035	0.039	e1	1.200	1.400	0.047	0.055
b	0.200	0.400	0.008	0.016	L	0.525	REF	0.021	REF
c	0.080	0.150	0.003	0.006	L1	0.260	0.460	0.010	0.018
D	2.000	2.200	0.079	0.087	θ	0°	8°	0°	8°
E	1.150	1.350	0.045	0.053					