

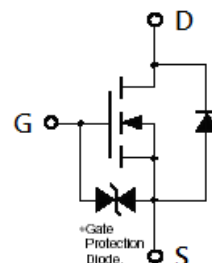
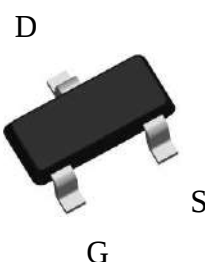
N-Channel Enhancement Mode MOSFET

Description :

- Low voltage drive(2.5V drive) makes this device ideal for portable equipment.
- The MOSFET elements are independent, eliminating mutual interference.
- Mounting cost and area can be cut in half.
- High speed switching
- ESD protected device, HBM $\geq 2\text{kV}$
- Pb-free lead plating & halogen-free package

BV_{DSS}		60V
$I_D@V_{GS}=4.5V, T_A=25^\circ C$		250mA
$R_{DS(on)}(TYP)$	$V_{GS}=4.5V, I_D=200mA$	1.3Ω
	$V_{GS}=2.5V, I_D=100mA$	1.7Ω

SOT-323



G : Gate S : Source D : Drain

Ordering Information

Device	Package	Shipping
KWAK6-3	SOT-323 (Pb-free lead plating & halogen-free package)	3000 pcs / Tape & Reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	BV_{DSS}	60	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current	I_D	250	mA
Pulsed Drain Current	I_{DM}	1000 *1	
Total Power Dissipation	P_D	200 *2	mW
ESD susceptibility	V_{ESD}	2000 *3	V
Operating Junction and Storage Temperature Range	$T_J ; T_{stg}$	-55~+150	°C

Note : *1. Pulse Width $\leq 10\mu s$, Duty cycle $\leq 1\%$

*2. With each pin mounted on the recommended lands.

*3. Human body model, $1.5k\Omega$ in series with $100pF$

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$*R_{\theta JC}$	150	°C/W
Thermal Resistance, Junction to Ambient, max	$*R_{\theta JA}$	625	

Note : With each pin mounted on the recommended lands.

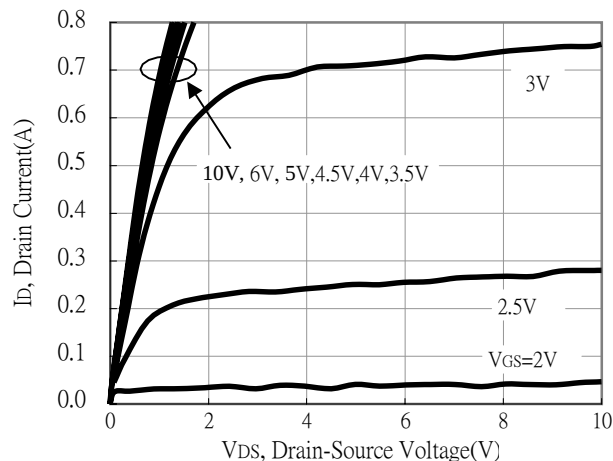
Electrical Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	60	-	-	V	$V_{GS}=0V, I_D=250\mu A$
$V_{GS(th)}$	0.5	-	1.5		$I_D=250\mu A, V_{DS}=V_{GS}$
I_{GSS}	-	-	± 10	μA	$V_{GS}=\pm 16V, V_{DS}=0V$
I_{DSS}	-	-	1		$V_{DS}=60V, V_{GS}=0V$
$R_{DS(on)}$	-	1.3	3	Ω	$V_{GS}=4.5V, I_D=200mA$
	-	1.7	5.1		$V_{GS}=2.5V, I_D=100mA$
G_{FS}	100	322	-	mS	$V_{DS}=5V, I_D=100mA$
Dynamic					
C_{iss}	-	26	-	pF	$V_{DS}=25V, V_{GS}=0V, f=1MHz$
C_{oss}	-	9	-		
C_{rss}	-	7	-		
$t_{d(on)}$	-	3	-	ns	$V_{DD}=30V, I_D=200mA, V_{GS}=10V, R_G=25\Omega$
t_r	-	16	-		
$t_{d(off)}$	-	11	-		
t_f	-	18	-		
* Q_g	-	1.6	-	nC	$V_{DS}=30V, I_D=0.5A, V_{GS}=10V$
* Q_{gs}	-	0.4	-		
* Q_{gd}	-	0.2	-		
R_g	-	3	-	Ω	$f=1MHz$
Source-Drain Diode					
* V_{SD}	-	0.8	1.2	V	$V_{GS}=0V, I_S=100mA$
* t_{rr}	-	8.7	-	ns	$I_F=0.5A, dI_F/dt=100A/\mu s$
* Q_{rr}	-	2.7	-	nC	

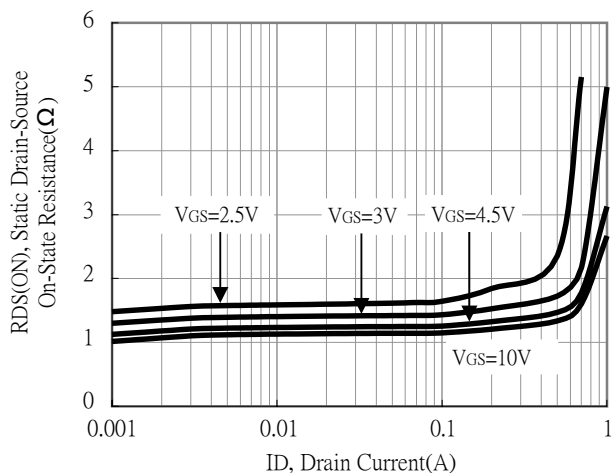
*Pulse Test : Pulse Width $\leq 300\mu s$, Duty Cycle $\leq 2\%$

Typical Characteristics

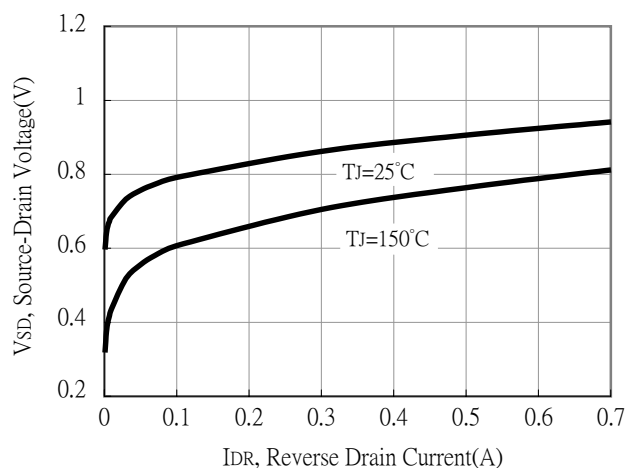
Typical Output Characteristics



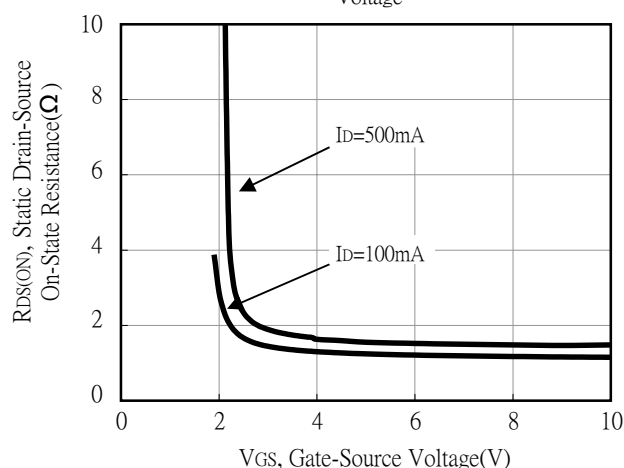
Static Drain-Source On-State resistance vs Drain Current



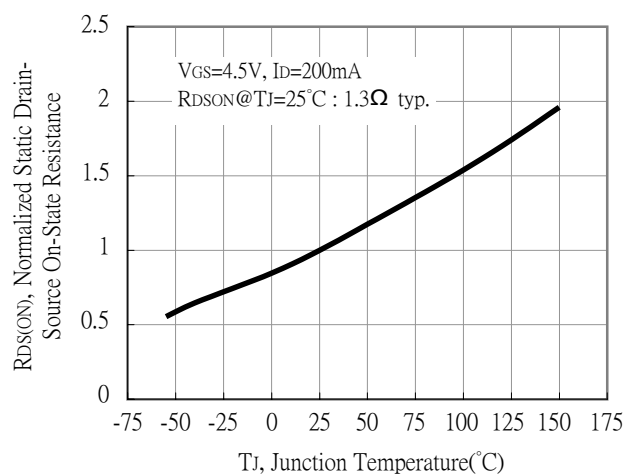
Reverse Drain Current vs Source-Drain Voltage



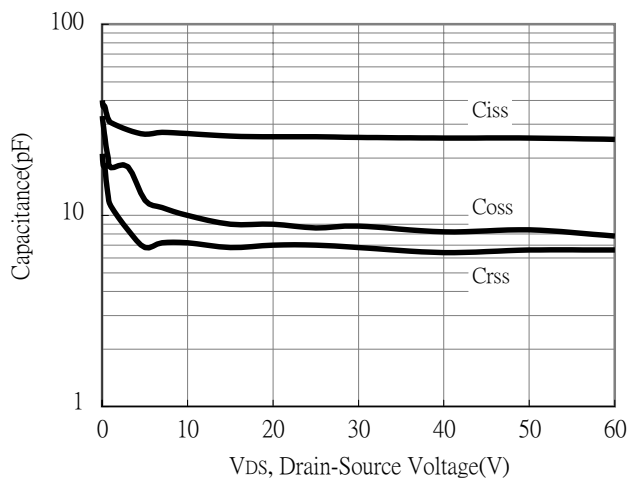
Static Drain-Source On-State Resistance vs Gate-Source Voltage



Drain-Source On-State Resistance vs Junction Temperature

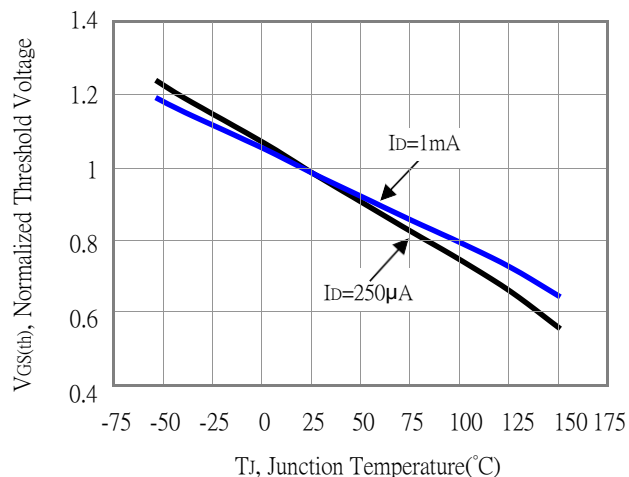


Capacitance vs Drain-to-Source Voltage

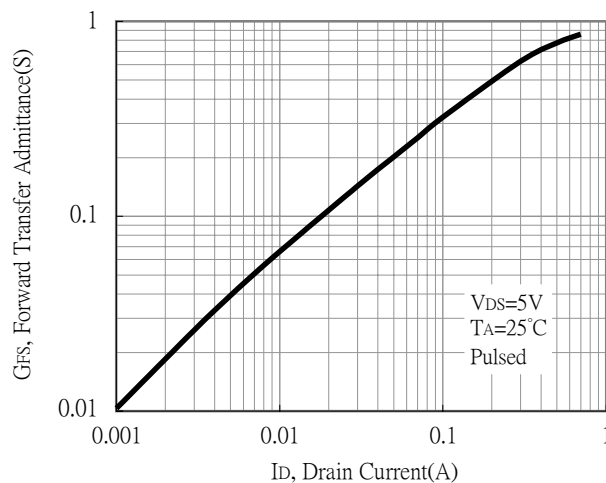


Typical Characteristics(Cont.)

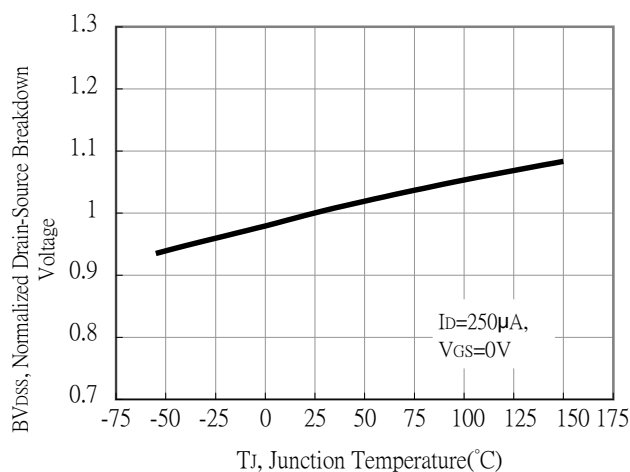
Threshold Voltage vs Junction Temperature



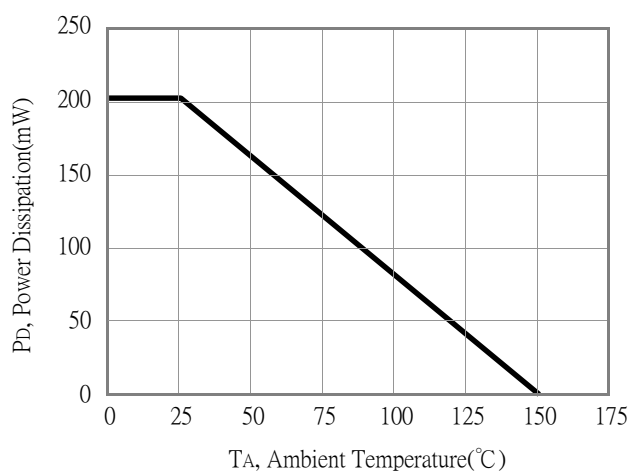
Forward Transfer Admittance vs Drain Current



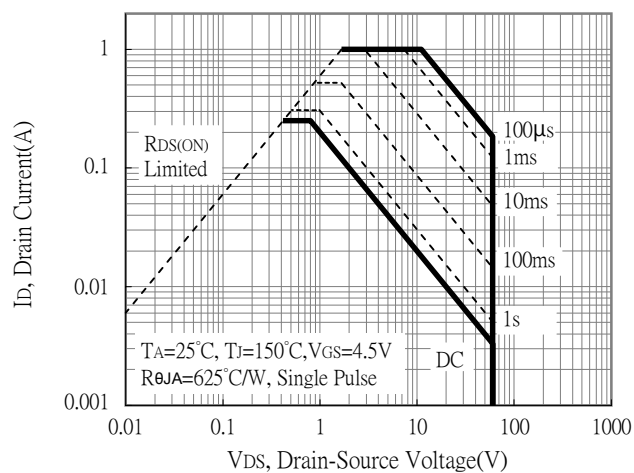
Breakdown Voltage vs Ambient Temperature



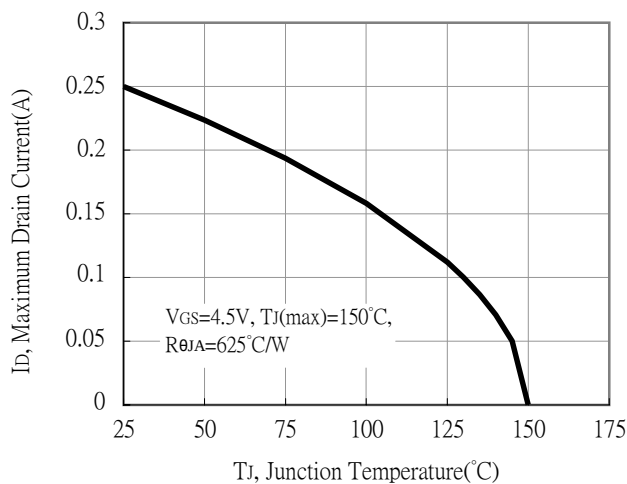
Power Derating Curve



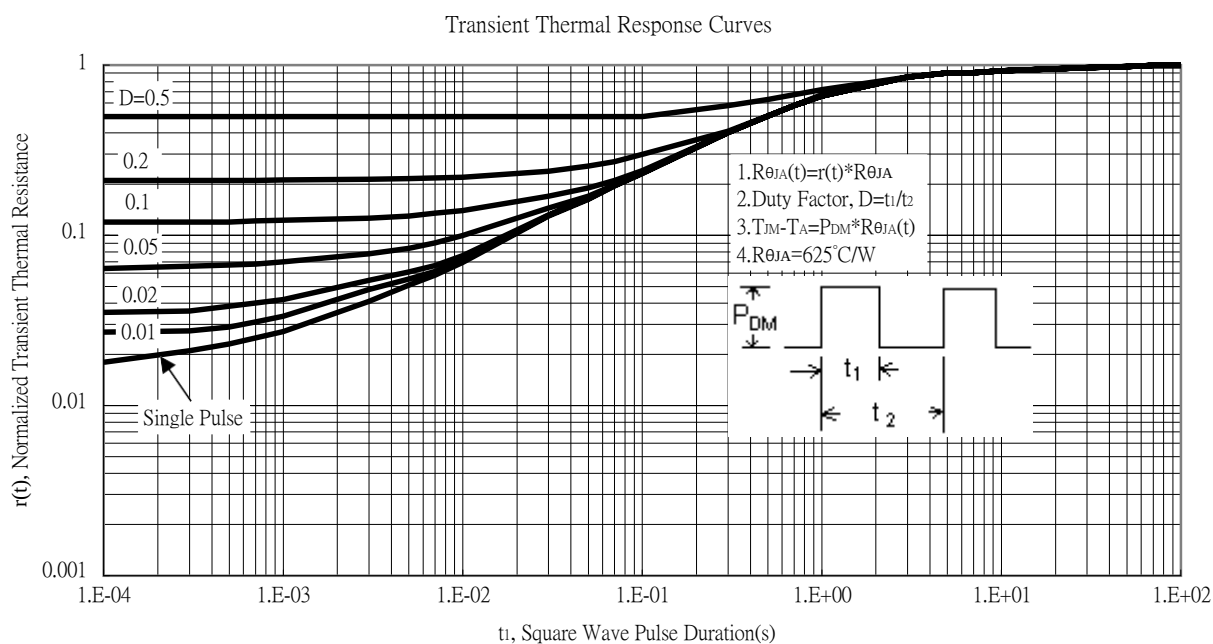
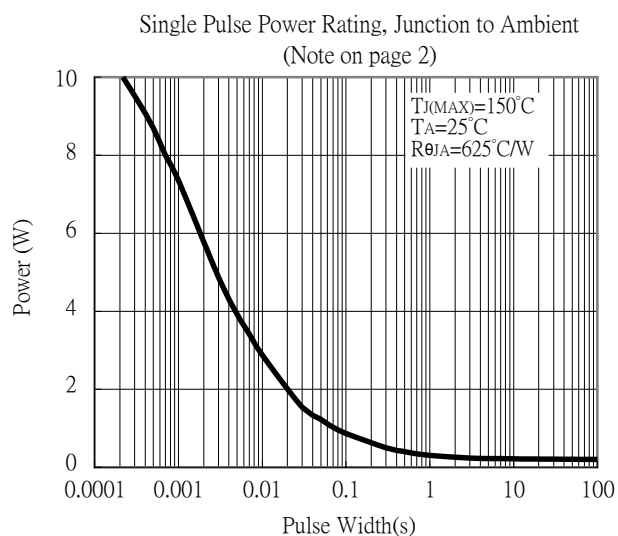
Maximum Safe Operating Area



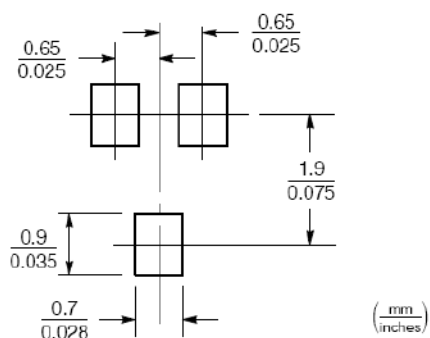
Maximum Drain Current vs Junction Temperature



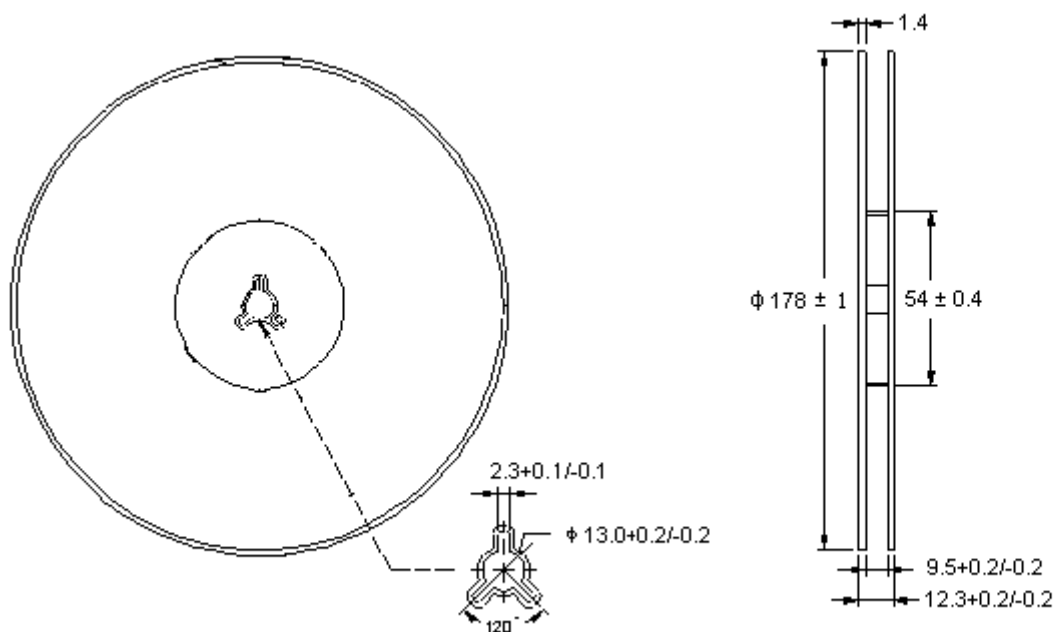
Typical Characteristics(Cont.)



Recommended Soldering Footprint

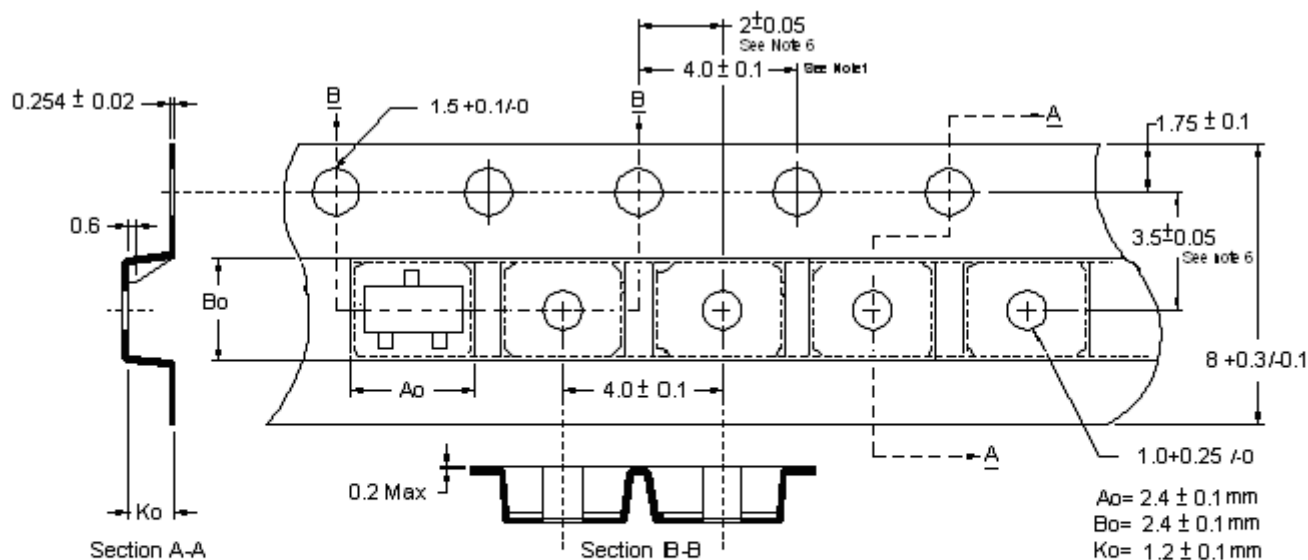


Reel Dimension

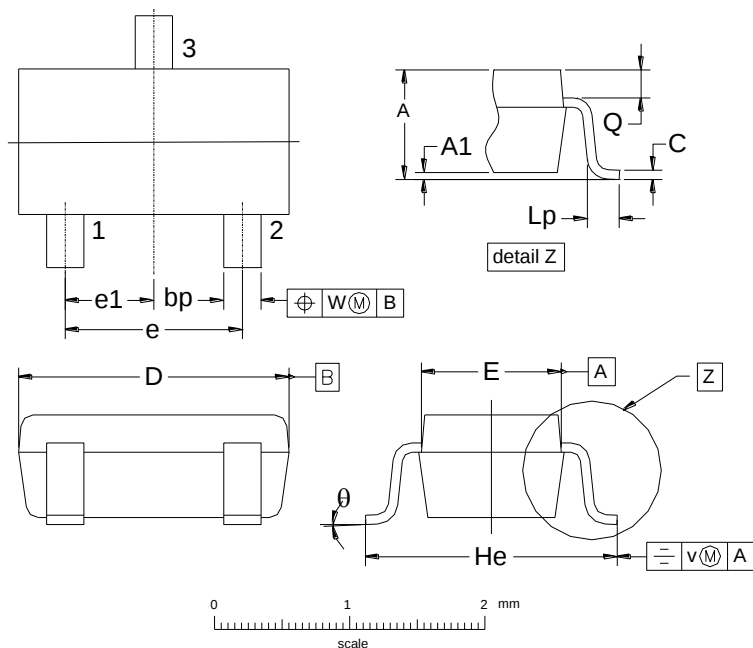


Unit: millimeter

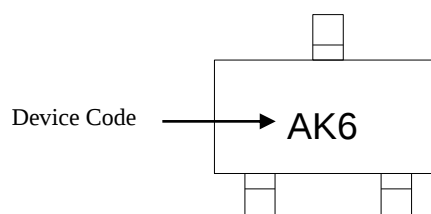
Carrier Tape Dimension



SOT-323 Dimension



Marking:



3-Lead SOT-323 Plastic
Surface Mounted Package

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

DIM	Inches		Millimeters		DIM	Inches		Millimeters	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.0315	0.0433	0.80	1.10	e1	0.0256	-	0.65	-
A1	0.0000	0.0039	0.00	0.10	He	0.0787	0.0886	2.00	2.25
bp	0.0118	0.0157	0.30	0.40	Lp	0.0059	0.0177	0.15	0.45
C	0.0039	0.0098	0.10	0.25	Q	0.0051	0.0091	0.13	0.23
D	0.0709	0.0866	1.80	2.20	v	0.0079	-	0.2	-
E	0.0453	0.0531	1.15	1.35	w	0.0079	-	0.2	-
e	0.0512	-	1.3	-	θ	-	-	10°	0°