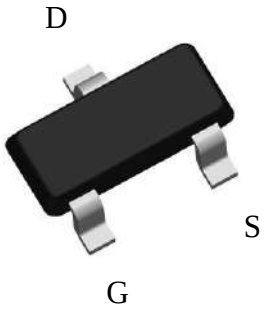
N-Channel Enhancement Mode MOSFET

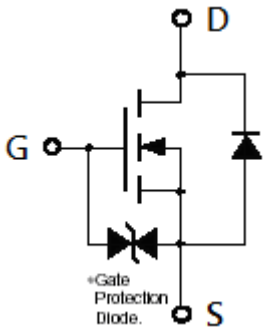
Description:

- 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≧2kV
- Pb-free lead plating & halogen-free package

SOT-523



BV_{DSS}		60V
I_D@V_{GS}=4.5V, T_A=25°C		215mA
$R_{DSON(TYP)}$	V_{GS}=4.5V, I_D=200mA	1.3Ω
	V_{GS}=2.5V, I_D=100mA	1.7Ω



G：Gate S：Source D：Drain

Ordering Information

Device	Package	Shipping
KWAK6-5	SOT-523 (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	215	mA
Pulsed Drain Current	I_{DM}	860 *1	
Total Power Dissipation	P_D	150 *2	mW
ESD susceptibility	V_{ESD}	2000 *3	V
Operating Junction and Storage Temperature Range	Tj ; Tstg	-55~+150	°C

Note : *1. Pulse Width ≤ 10μs, Duty cycle ≤1%
*2. With each pin mounted on the recommended lands.
*3. Human body model, 1.5kΩ in series with 100pF

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction to Ambient, max	*$R_{\theta JA}$	833	°C/W

Note : With each pin mounted on the recommended lands.

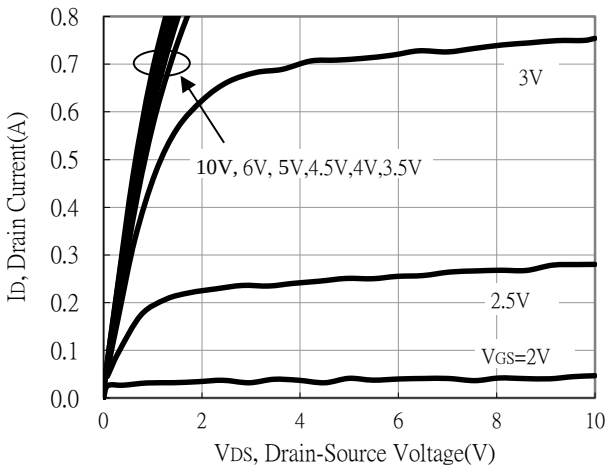
Electrical Characteristics (Ta=25°C)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	60	-	-	V	V_{GS}=0V, I_D=250μA
$V_{GS(th)}$	0.5	-	1.5		I_D=250μA, V_{DS}=V_{GS}
I_{GSS}	-	-	±10	μA	V_{GS}=±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}	-	25.8	-	pF	V_{DS}=25V, V_{GS}=0V, f=1MHz
C_{oss}	-	8.6	-		
C_{rss}	-	7	-		
$t_{d(on)}$	-	3.1	-	ns	V_{DD}=30V, I_D=200mA, V_{GS}=10V, R_G=25Ω
t_r	-	15.1	-		
$t_{d(off)}$	-	11.4	-		
t_f	-	18	-		
*Qg	-	1.6	-	nC	V_{DS}=30V, I_D=0.5A, V_{GS}=10V
*Qgs	-	0.4	-		
*Qgd	-	0.2	-		
Rg	-	3	-	Ω	f=1MHz
Source-Drain Diode					
*V_{SD}	-	0.79	1.2	V	V_{GS}=0V, I_S=100mA
*trr	-	8.3	-	ns	I_F=0.5A, dI_F/dt=100A/μs
*Qrr	-	2.7	-	nC	

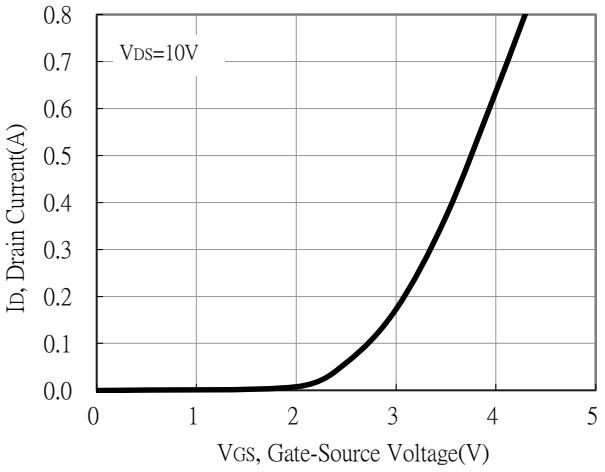
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Typical Characteristics

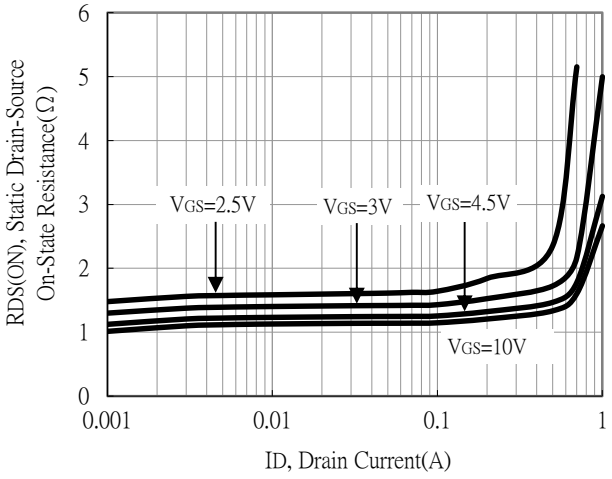
Typical Output Characteristics



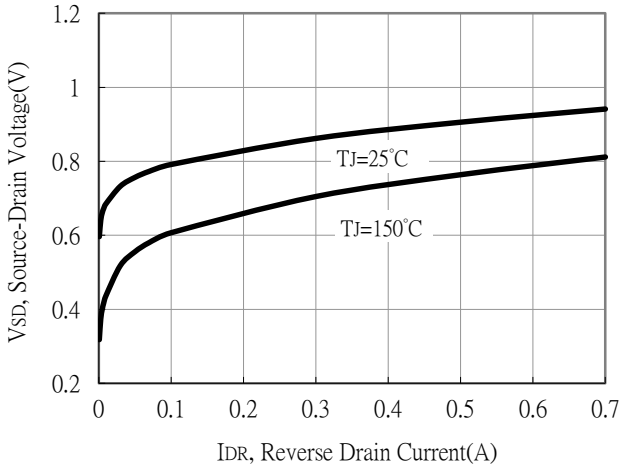
Typical Transfer Characteristics



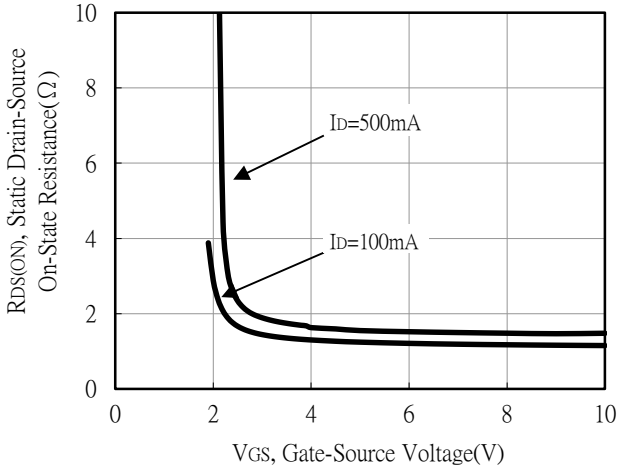
Static Drain-Source On-State resistance vs Drain Current



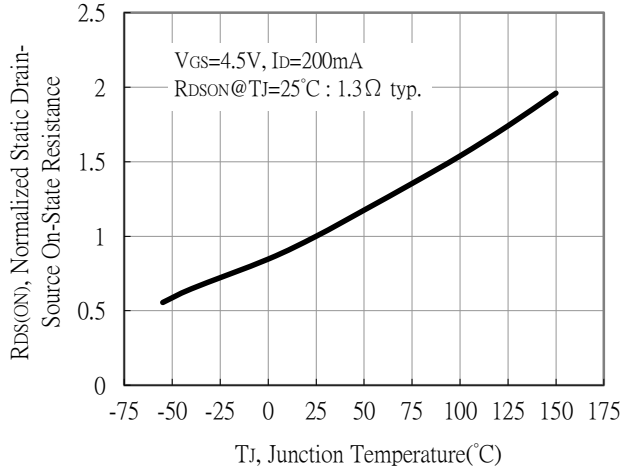
Reverse Drain Current vs Source-Drain Voltage



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

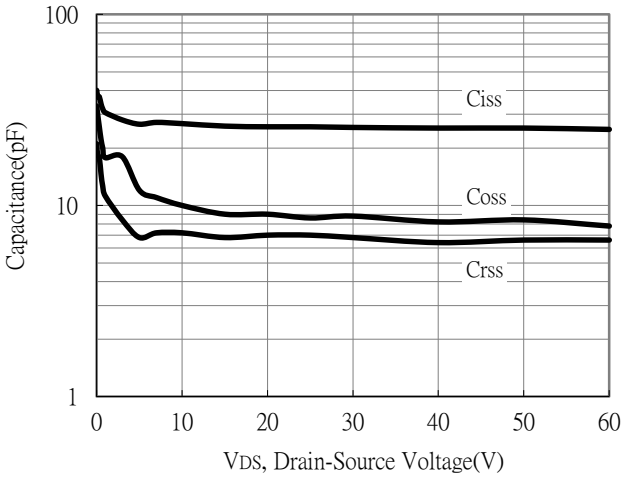


Drain-Source On-State Resistance vs Junction Tempearture

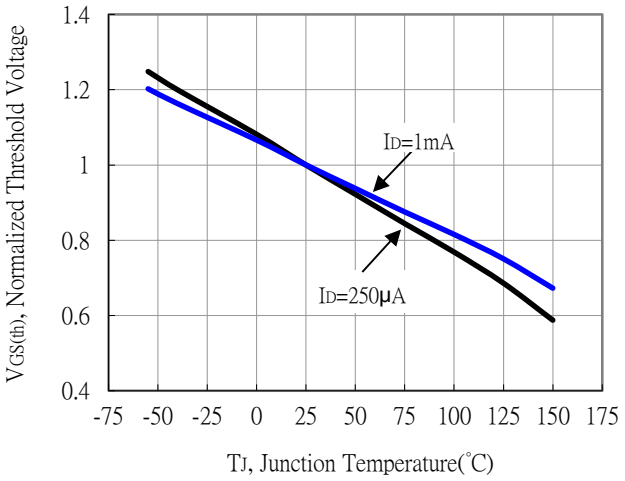


Typical Characteristics(Cont.)

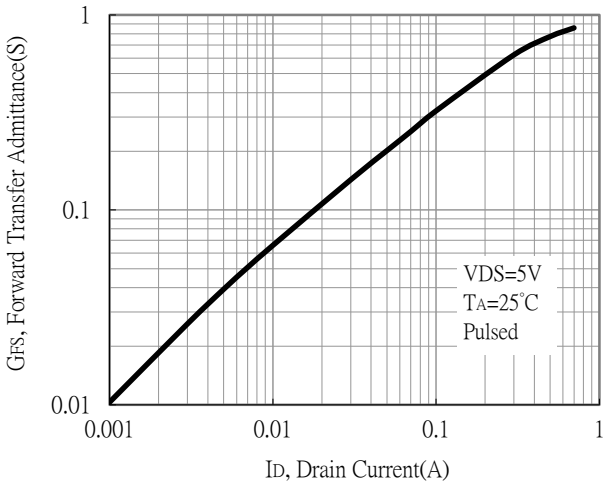
Capacitance vs Drain-to-Source Voltage



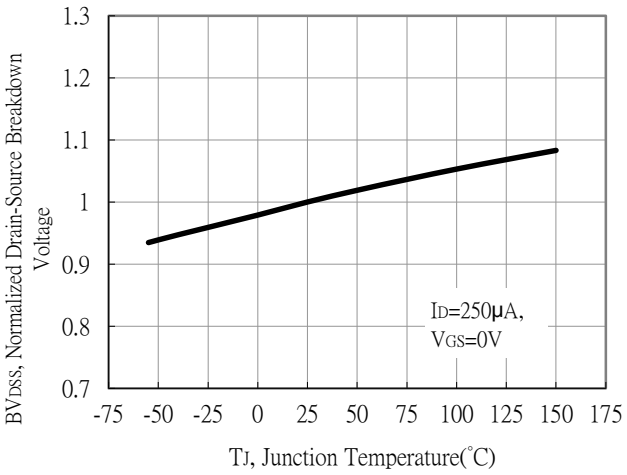
Threshold Voltage vs Junction Tempearture



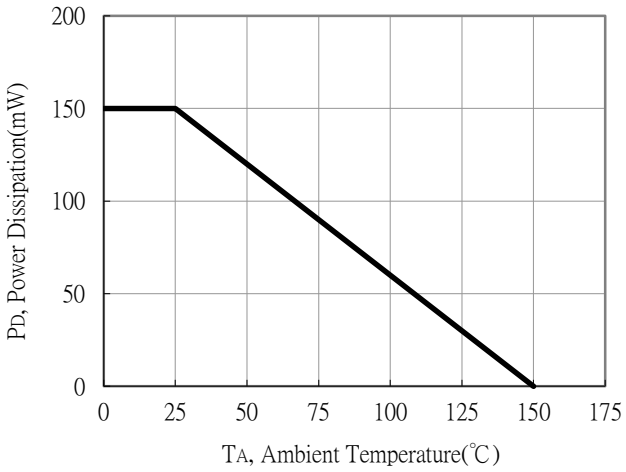
Forward Transfer Admittance vs Drain Current



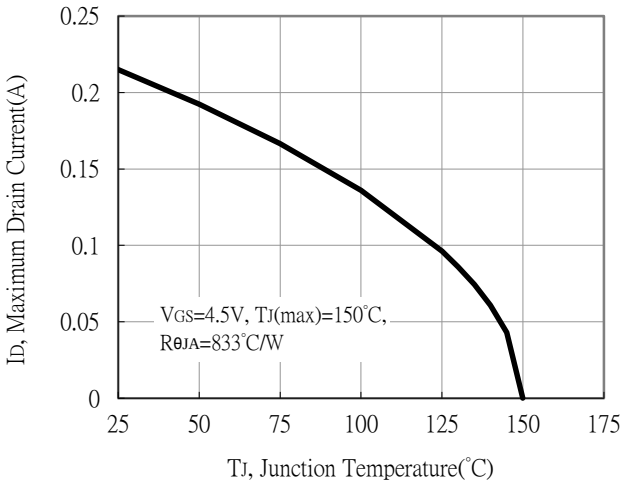
Brekdown Voltage vs Ambient Temperature



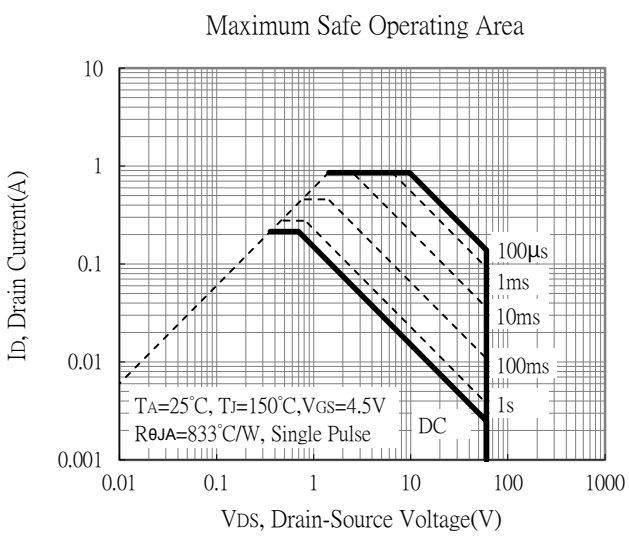
Power Derating Curve

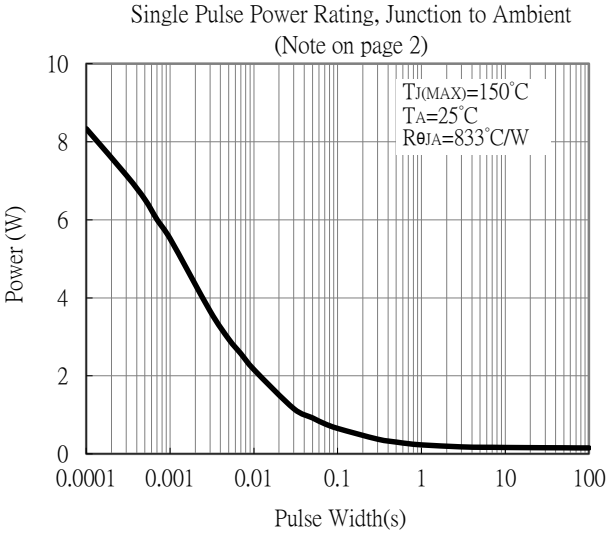


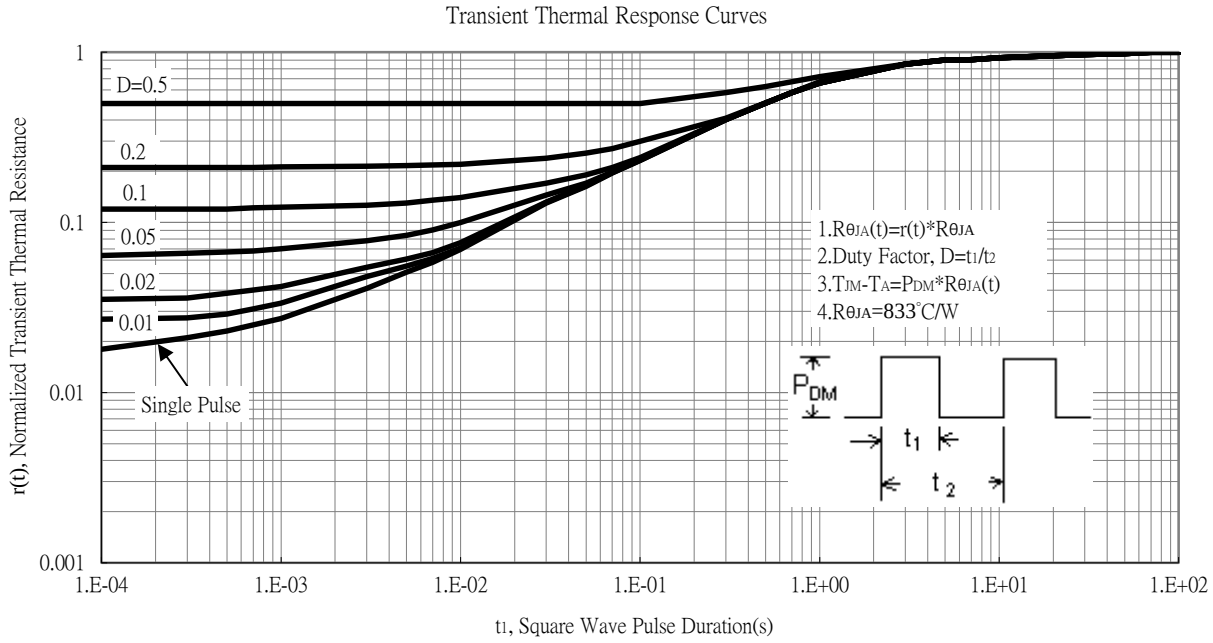
Maximum Drain Current vs Junction Temperature



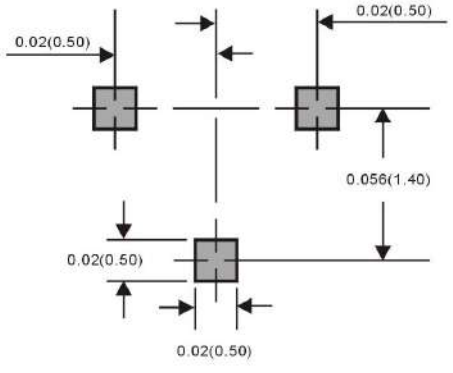
Typical Characteristics(Cont.)





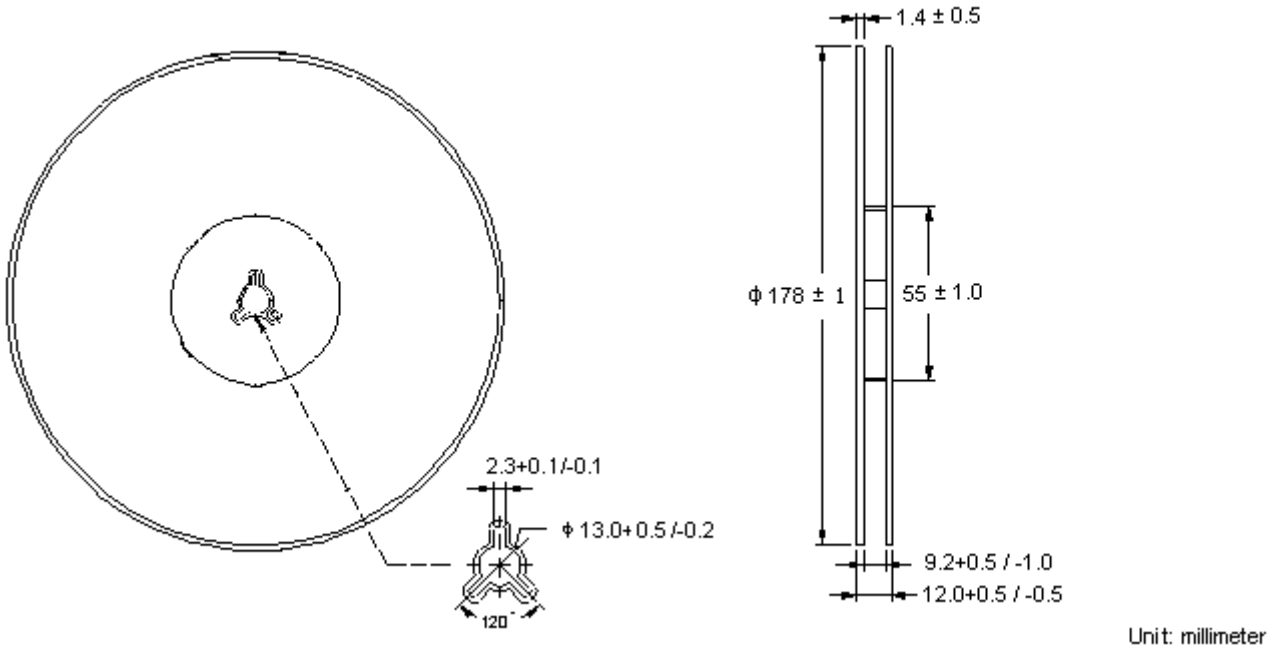


Recommended Soldering Footprint



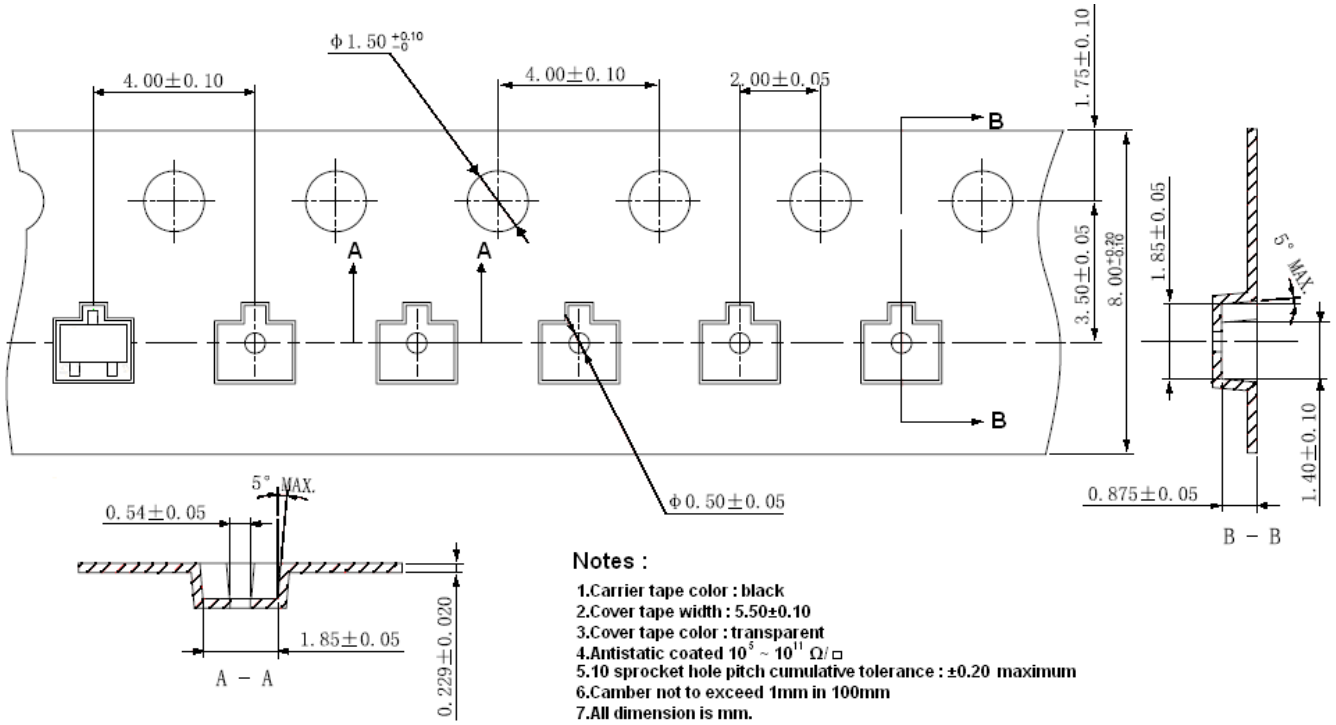
Dimensions in inches and (millimeters)

Reel Dimension



Unit: millimeter

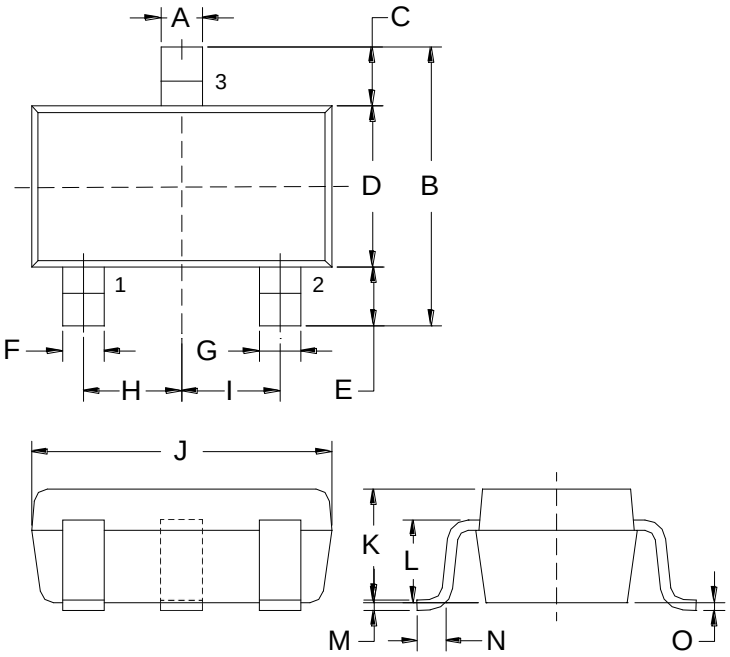
Carrier Tape Dimension



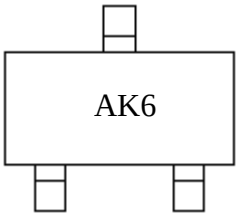
Notes :

1.Carrier tape color : black
2.Cover tape width : 5.50±0.10
3.Cover tape color : transparent
4.Antistatic coated $10^{5} \sim 10^{11}$ Ω/□
5.10 sprocket hole pitch cumulative tolerance : ±0.20 maximum
6.Camber not to exceed 1mm in 100mm
7.All dimension is mm.

SOT-523 Dimension



Marking:



3-Lead SOT-523 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	0.0079	0.0157	0.20	0.40	I	*0.0197	-	*0.50	-
B	0.0591	0.0669	1.50	1.70	J	0.0610	0.0650	1.55	1.65
C	0.0118	0.0197	0.30	0.50	K	0.0276	0.0315	0.70	0.80
D	0.0295	0.0335	0.75	0.85	L	0.0224	0.0248	0.57	0.63
E	0.0118	0.0197	0.30	0.50	M	0.0020	0.0059	0.05	0.15
F	0.0039	0.0118	0.10	0.30	N	0.0039	0.0118	0.10	0.30
G	0.0039	0.0118	0.10	0.30	O	0	0.0031	0	0.08
H	*0.0197	-	*0.50	-					