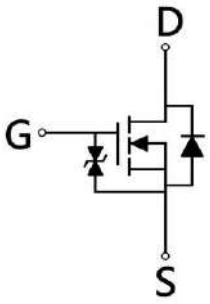
N-Channel Enhancement Mode MOSFET

Features:

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

SOT-723

BV_{DSS}	30V
I_D@V_{GS}=4.5V, T_A=25°C	0.79A
$R_{DS(ON)}$ typ.@V_{GS}=4.5V, I_D=0.2A	0.5Ω
$R_{DS(ON)}$ typ.@V_{GS}=2.5V, I_D=0.2A	0.6Ω
$R_{DS(ON)}$ typ.@V_{GS}=1.8V, I_D=10mA	0.9Ω



G : Gate S : Source D : Drain

Ordering Information

Device	Package	Shipping
KWA500N03K-7	SOT-723 (Pb-free lead plating and halogen-free package)	8000 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	0.79	A
Continuous Drain Current @ V_{GS}=4.5V, T_A=70°C			0.63	
Pulsed Drain Current	*a	I_{DM}	2.5	
Continuous Body Diode Forward Current @ T_A=25°C		I_S	0.65	
ESD susceptibility	*b	V_{ESD}	4000	V
Total Power Dissipation	T_A=25°C	P_D	0.78	W
	T_A=70°C		0.50	
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	$R_{\theta JA}$	160	°C/W

Note:
*a. Repetitive rating, pulse width limited by junction temperature $T_{J(MAX)}$=150℃. Ratings are based on low frequency and low duty cycles to keep initial T_J=25℃.
*b. Human body model, 1.5kΩ in series with 100pF.

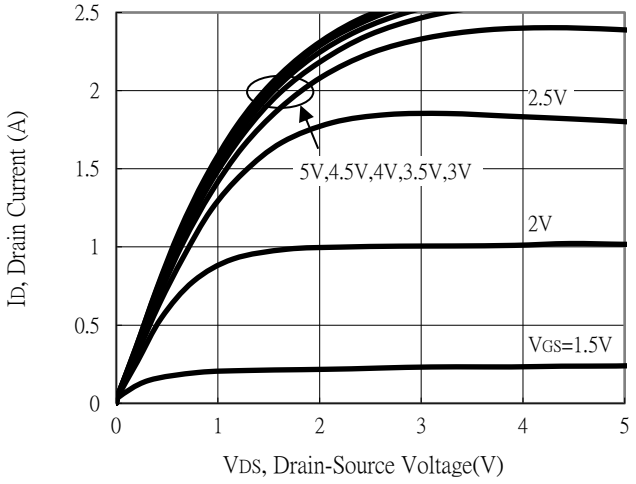
Electrical Characteristics (T_A=25°C, unless otherwise specified)

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
$R_{DS(ON)}$	-	0.5	0.7	Ω	V_{GS}=4.5V, I_D=0.2A
	-	0.6	0.9		V_{GS}=2.5V, I_D=0.2A
	-	0.9	2		V_{GS}=1.8V, I_D=10mA
Dynamic					
Ciss	-	31	-	pF	V_{DS}=15V, V_{GS}=0V, f=1MHz
Coss	-	11	-		
Crss	-	8	-		
Qg *1, 2	-	0.9	-	nC	V_{DS}=20V, I_D=0.2A, V_{GS}=4.5V
Qgs *1, 2	-	0.2	-		
Qgd *1, 2	-	0.2	-		
$t_{d(ON)}$ *1, 2	-	5.3	-	ns	V_{DS}=15V, I_D=0.2A, V_{GS}=4.5V, R_{GS}=6Ω
tr *1, 2	-	16	-		
$t_{d(OFF)}$ *1, 2	-	20	-		
t_f *1, 2	-	18	-		
Source-Drain Diode					
V_{SD} *1	-	0.85	1.2	V	I_S=0.2A, V_{GS}=0V
trr	-	4.7	-	ns	IF=0.5A, dIF/dt=100A/μs
Qrr	-	1.2	-	nC	

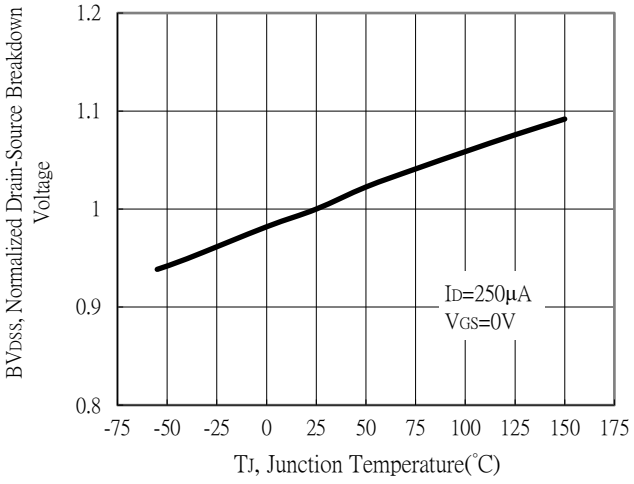
Note:
*1. Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%
*2. Independent of operating temperature

Typical Characteristics

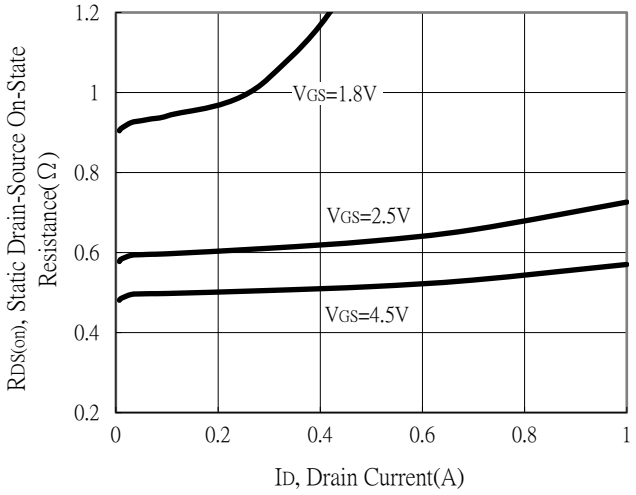
Typical Output Characteristics



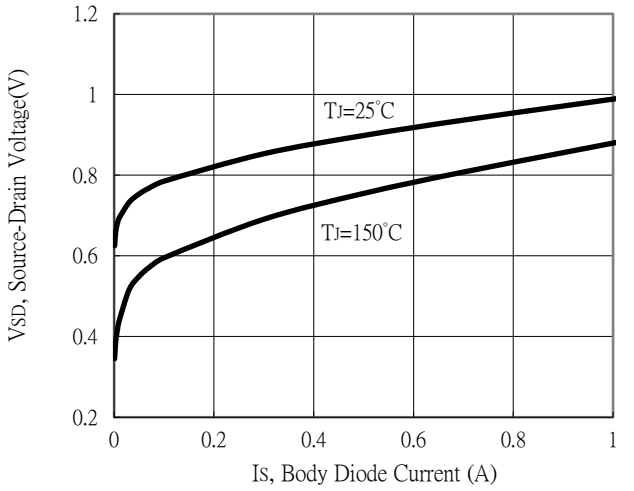
Breakdown Voltage vs Ambient Temperature



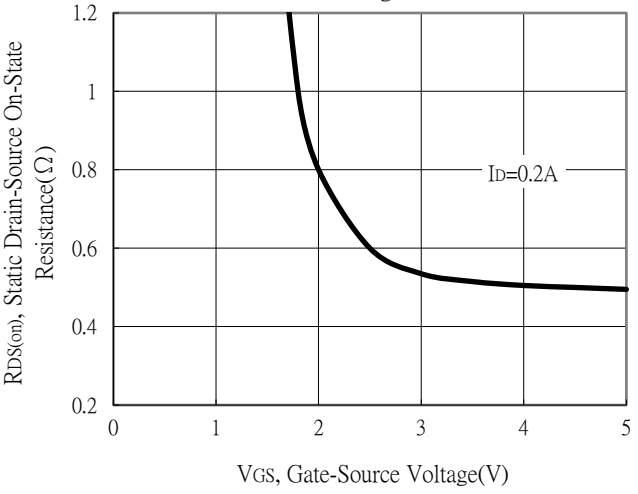
Static Drain-Source On-State resistance vs Drain Current



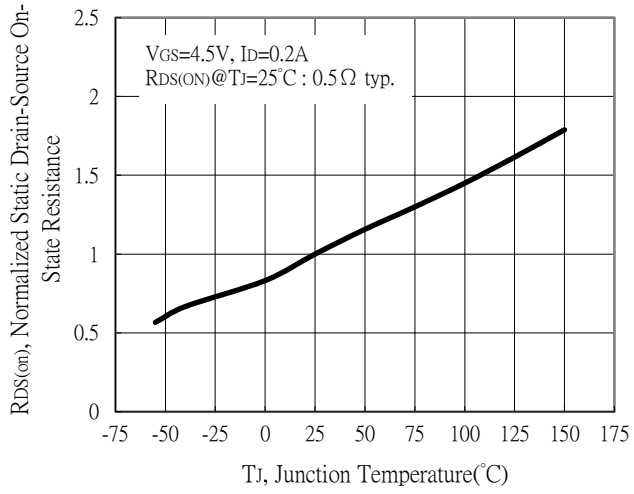
Body Diode Current vs Source-Drain Voltage



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

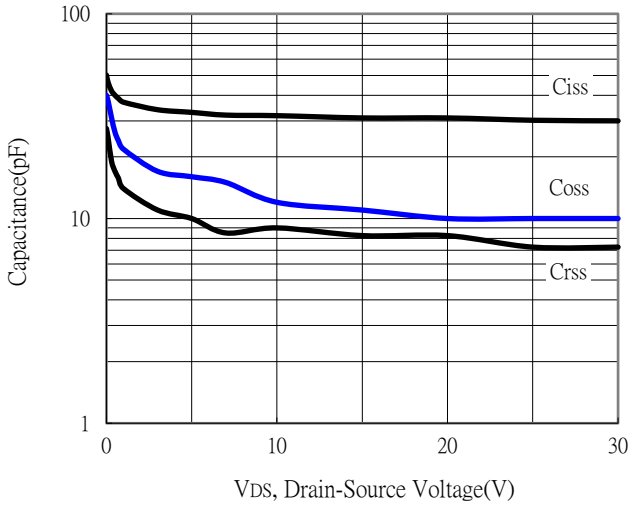


Drain-Source On-State Resistance vs Junction Temperature

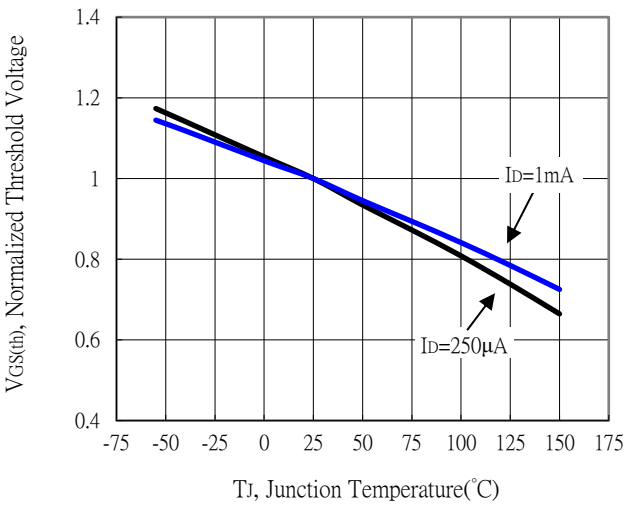


Typical Characteristics (Cont.)

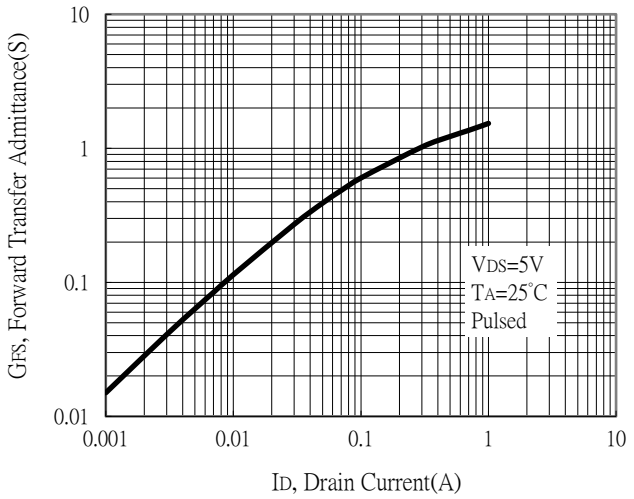
Capacitance vs Drain-to-Source Voltage



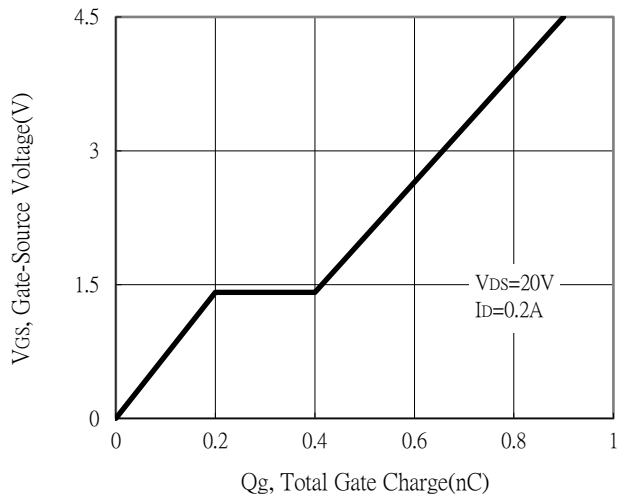
Threshold Voltage vs Junction Temperature



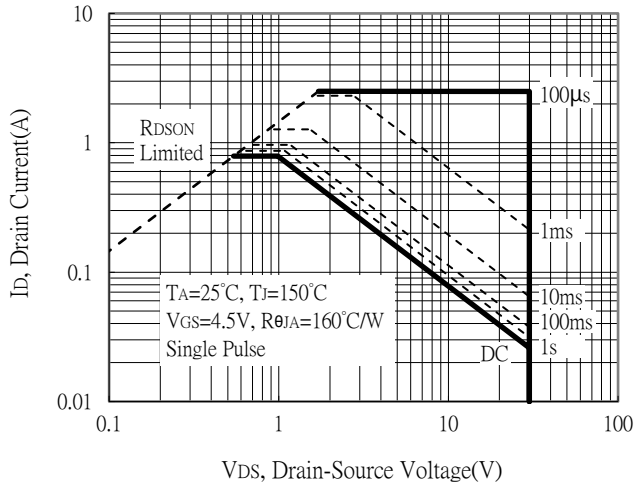
Forward Transfer Admittance vs Drain Current



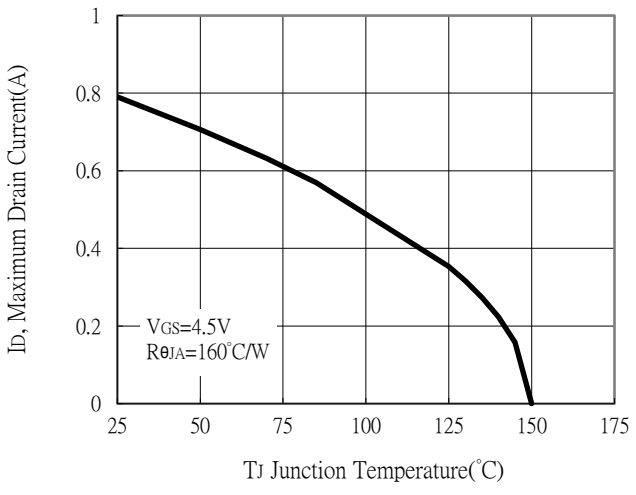
Gate Charge Characteristics



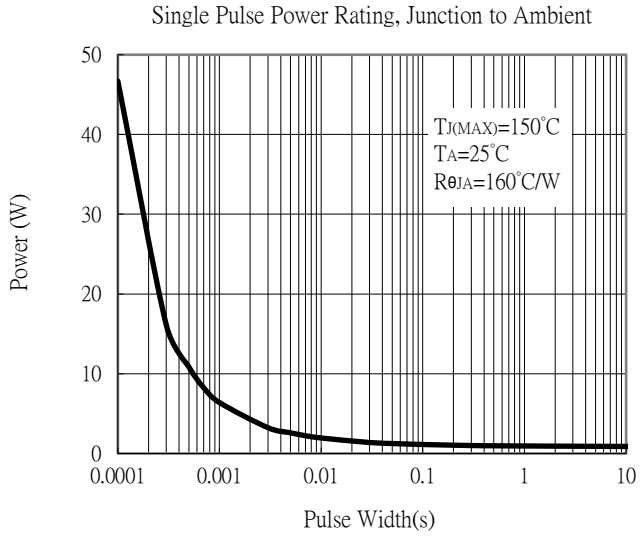
Maximum Safe Operating Area

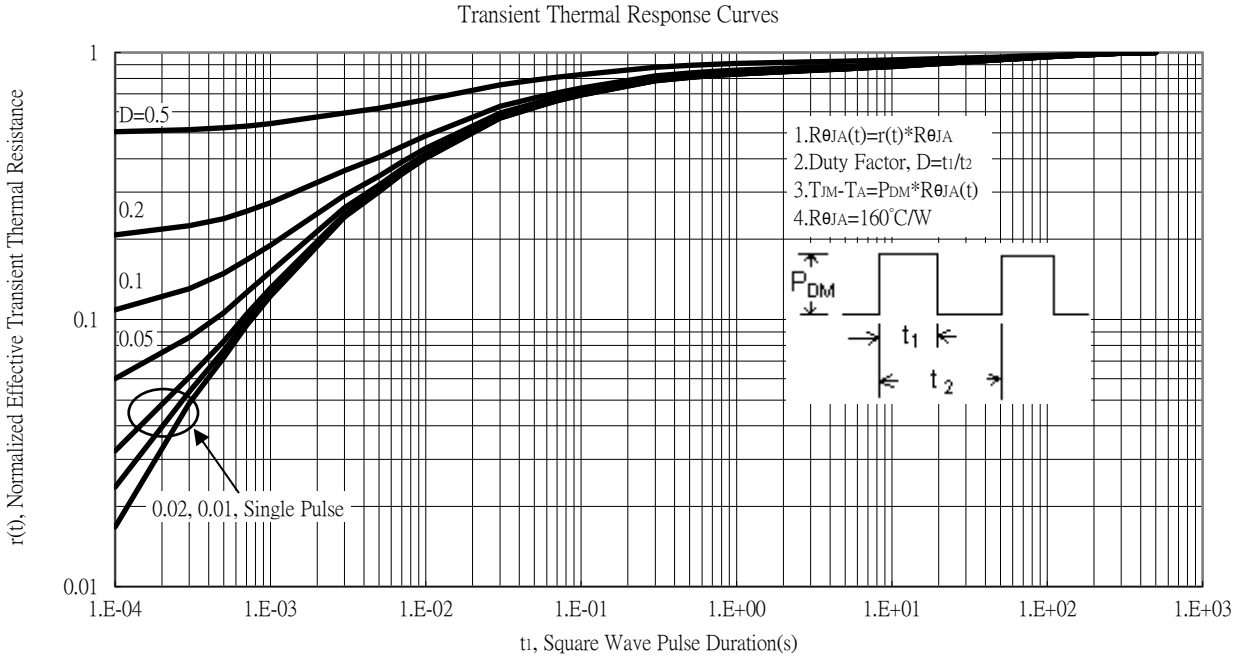


Maximum Drain Current vs Junction Temperature

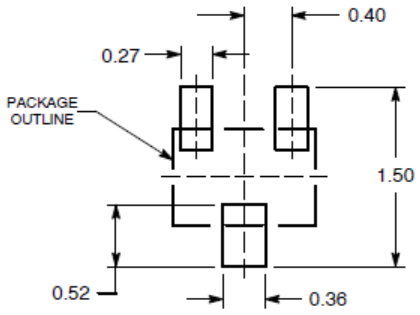


Typical Characteristics (Cont.)



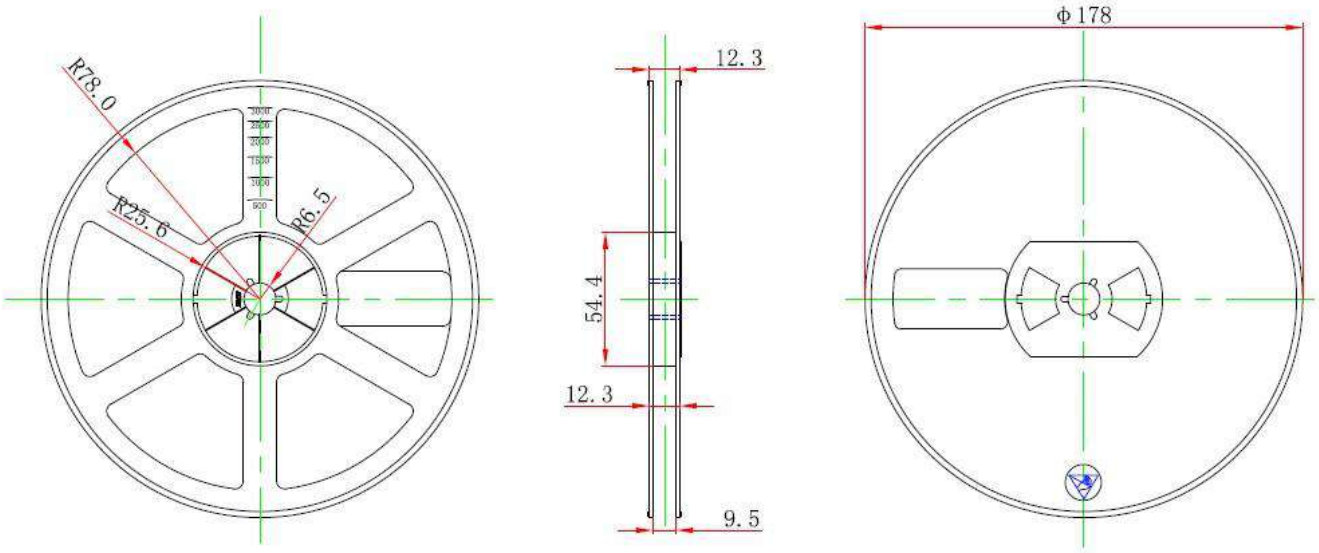


Recommended Soldering Footprint

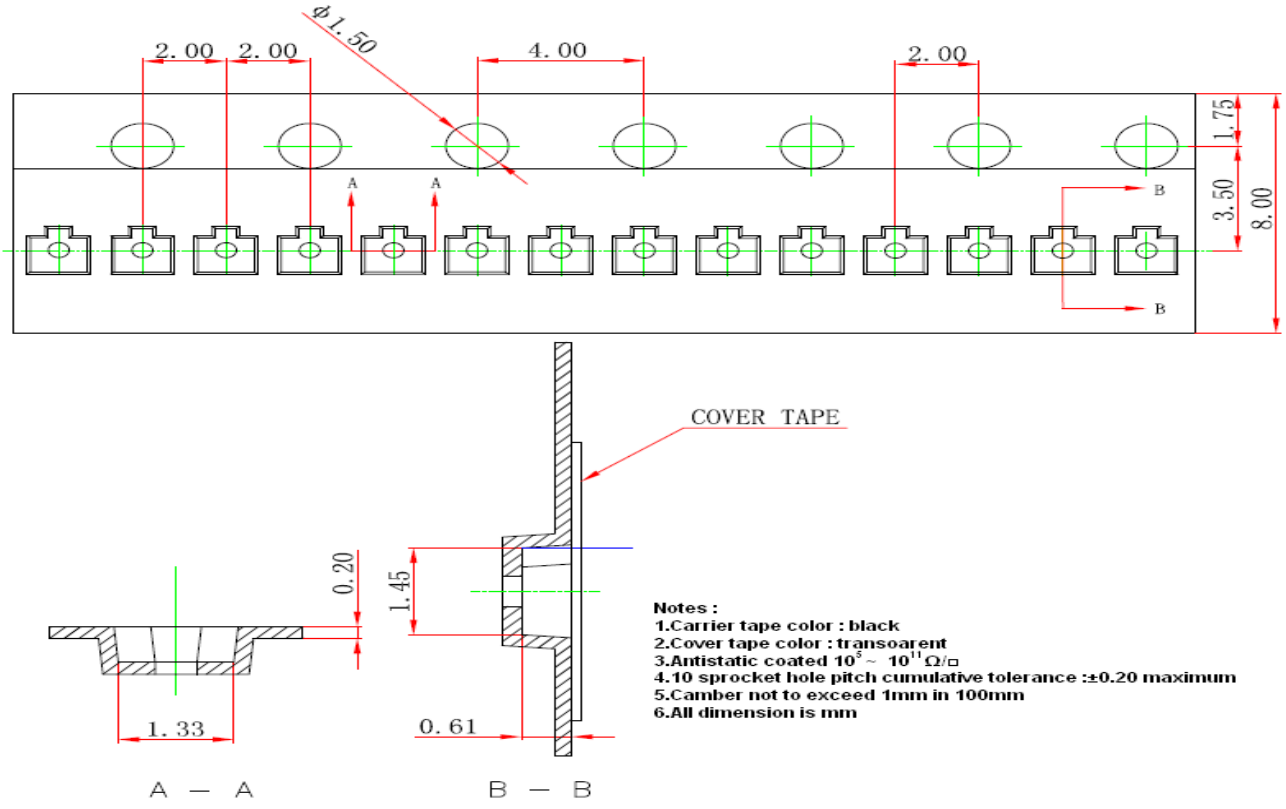


DIMENSIONS: MILLIMETERS

Reel Dimension

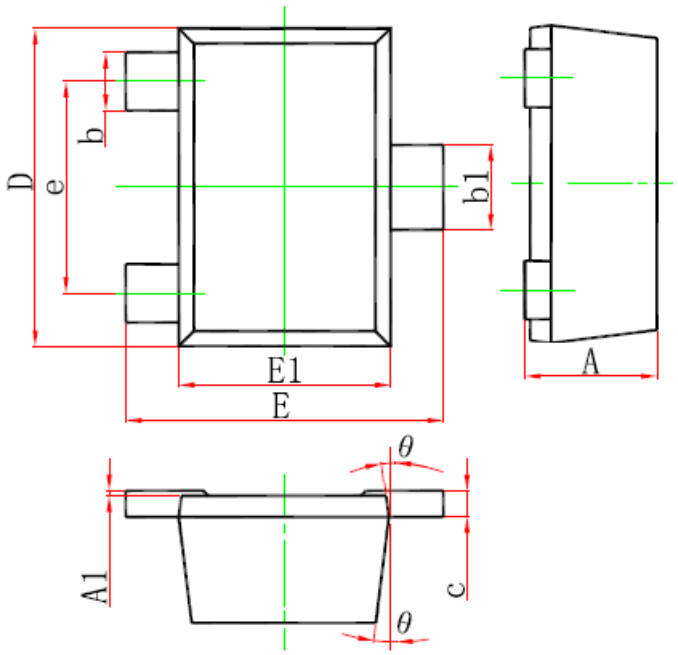


Carrier Tape Dimension

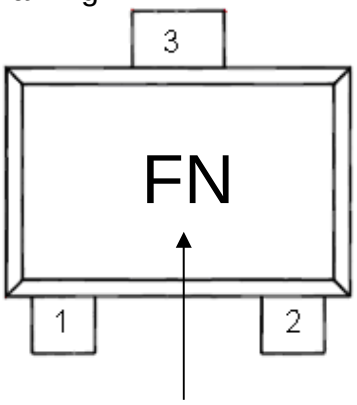


Notes :
1.Carrier tape color : black
2.Cover tape color : transoarent
3.Antistatic coated 10^5 ~ 10^{11} Ω/□
4.10 sprocket hole pitch cumulative tolerance :±0.20 maximum
5.Camber not to exceed 1mm in 100mm
6.All dimension is mm

SOT-723 Dimension



Marking:



3-Lead SOT-723 Plastic
Surface Mounted Package

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

*Typical

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	0.000	0.500	0.000	0.020	D	1.150	1.250	0.045	0.049
A1	0.000	0.050	0.000	0.002	E	1.150	1.250	0.045	0.049
b	0.170	0.270	0.007	0.011	E1	0.750	0.850	0.030	0.033
b1	0.270	0.370	0.011	0.015	e	0.800*		0.031*	
c	0.000	0.150	0.000	0.006	θ	7° REF		7° REF	