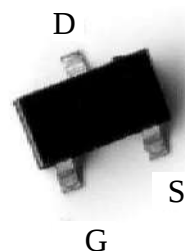


30V N-Channel Enhancement Mode MOSFET

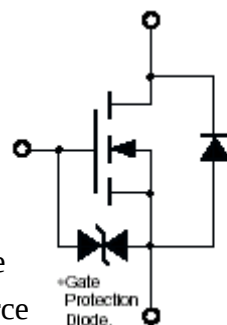
Features:

- Lower gate charge
- ESD protected gate
- Pb-free lead plating and Halogen-free package

SOT-23



BV_{DSS}	30V
$I_D @ V_{GS}=10V, T_A=25^\circ C$	6.5A
$R_{DS(on)}(TYP) @ V_{GS}=10V, I_D=4.2A$	17.9m Ω
$R_{DS(on)}(TYP) @ V_{GS}=4.5V, I_D=3.5A$	24.4m Ω



G : Gate
S : Source
D : Drain

Ordering Information

Device	Package	Shipping
KWB25N03K	SOT-23 (Pb-free lead plating and halogen-free package)	3000 pcs / tape & reel

Absolute Maximum Ratings (Tc=25°C, unless otherwise noted)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V _{DS}	30	V
Gate-Source Voltage	V _{GS}	±16	
Continuous Drain Current	I _D	6.5	A
		5.2	
Pulsed Drain Current	I _{DM}	50 (Note 1 & 2)	
Power Dissipation	P _D	1.38 (Note 3)	W
		0.88 (Note 3)	
Operating Junction and Storage Temperature	T _j , T _{stg}	-55 ~ +150	°C

Thermal Characteristics

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction to Ambient, max	R _{θJA}	90 *2	°C/W
Thermal Resistance, Junction to Case, max	R _{θJC}	20	

Note : 1. Pulse width limited by maximum junction temperature.

2. Duty cycle ≤ 1%.

3. Surface mounted on 1 in² copper pad of FR4 board, ≤10s; 270°C/W when mounted on min. copper pad.

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)}	1	-	2.5		V _{DS} =V _{GS} , I _D =250μA
I _{GSS}	-	-	±20	μA	V _{GS} =±16V, V _{DS} =0V
I _{DSS}	-	-	1		V _{DS} =24V, V _{GS} =0V
	-	-	10		V _{DS} =24V, V _{GS} =0V, T _j =55°C
*R _{DS(ON)} ¹	-	17.9	23.5	mΩ	V _{GS} =10V, I _D =4.2A
	-	24.4	32.0		V _{GS} =4.5V, I _D =2A
*G _{FS} ¹	-	3.7	-	S	V _{DS} =10V, I _D =1A
Dynamic					
C _{iss}	-	300	-	pF	V _{DS} =15V, V _{GS} =0V, f=1MHz
C _{oss}	-	95	-		
C _{rss}	-	50	-		
*t _{d(ON)} ^{1 2}	-	4.8	-	ns	V _{DS} =15V, I _D =1A, V _{GS} =10V, R _G =6Ω
*t _r ^{1 2}	-	18	-		
*t _{d(OFF)} ^{1 2}	-	17.6	-		
*t _f ^{1 2}	-	6.4	-		

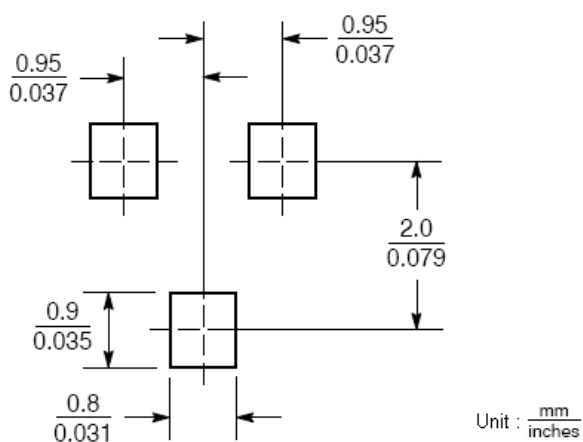
*Qg ^{1 2} (V _{GS} =10V)	-	7.8	-	nC	V _{DS} =15V, I _D =4A, V _{GS} =10V
*Qg ^{1 2} (V _{GS} =4.5V)	-	4.2	-		
*Qgs ^{1 2}	-	1	-		
*Qgd ^{1 2}	-	2	-		
Source-Drain Diode					
I _S	-	-	2	A	
I _{SM} ³	-	-	8		
V _{SD} ¹	-	0.74	1	V	I _S =1A, V _{GS} =0V
trr ¹	-	9.1	-	ns	I _F =1A, dI _F /dt=100A/μs
Qrr ¹	-	2.9	-	nC	

¹ Pulse test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$

² Independent of operating temperature

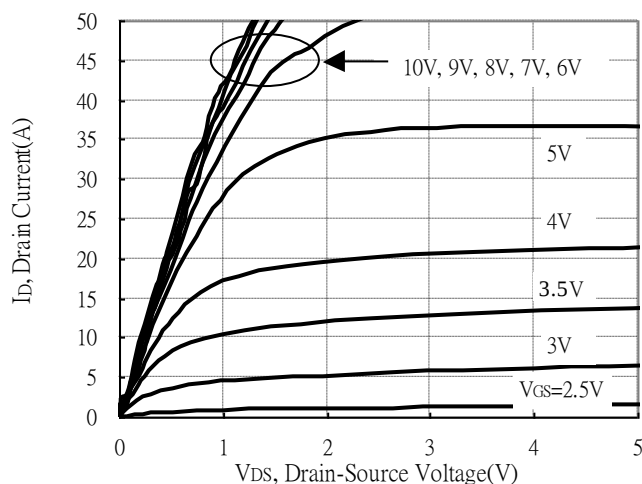
³ Pulse width limited by maximum junction temperature

Recommended Soldering Footprint

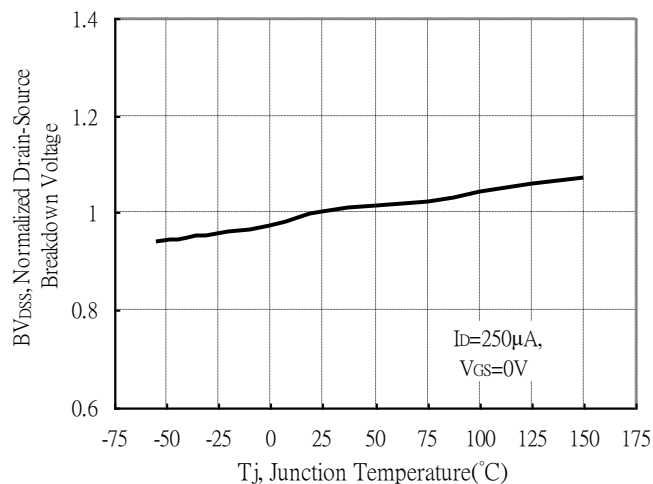


Typical Characteristics

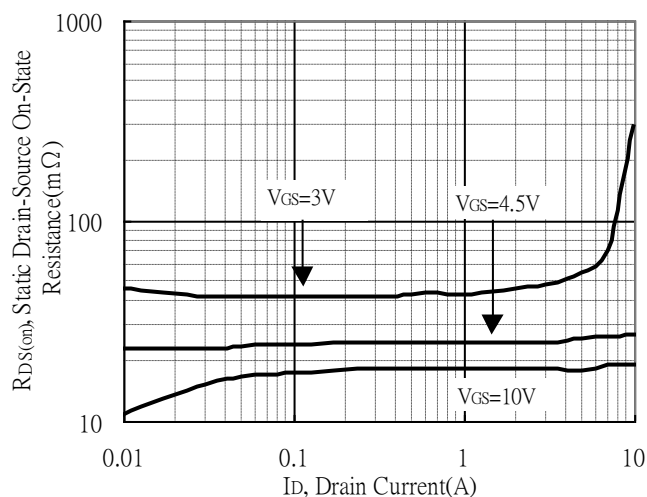
Typical Output Characteristics



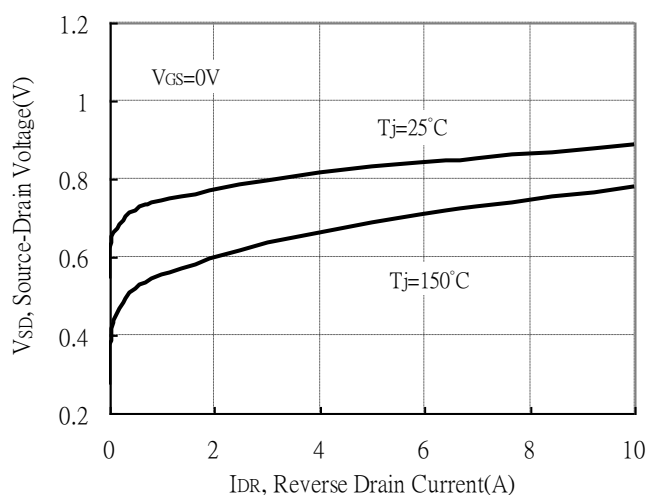
Breakdown Voltage vs Ambient Temperature



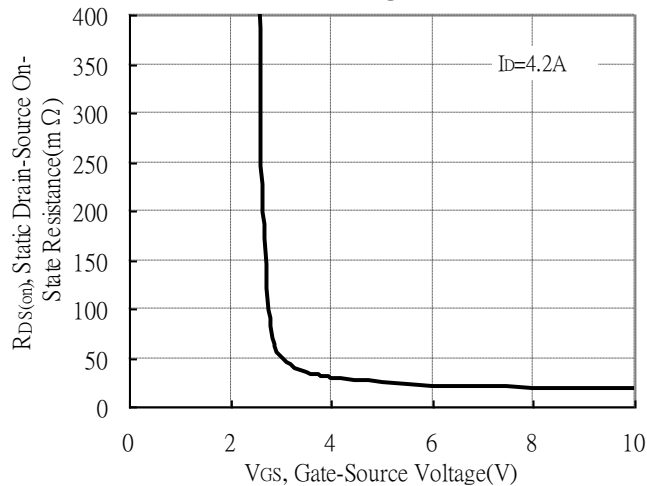
Static Drain-Source On-State resistance vs Drain Current



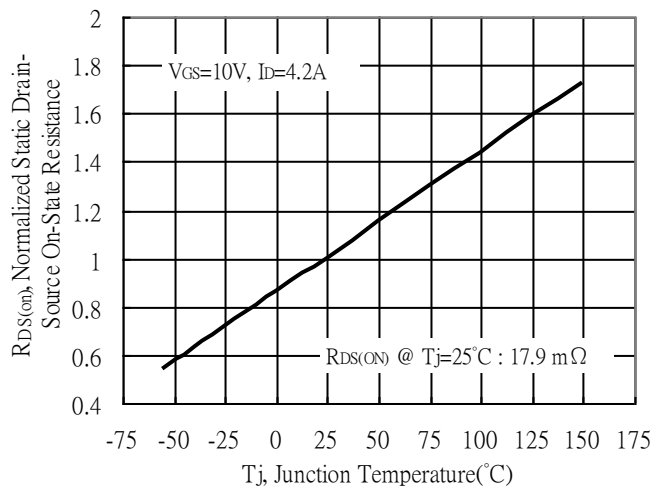
Reverse Drain Current vs Source-Drain Voltage



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

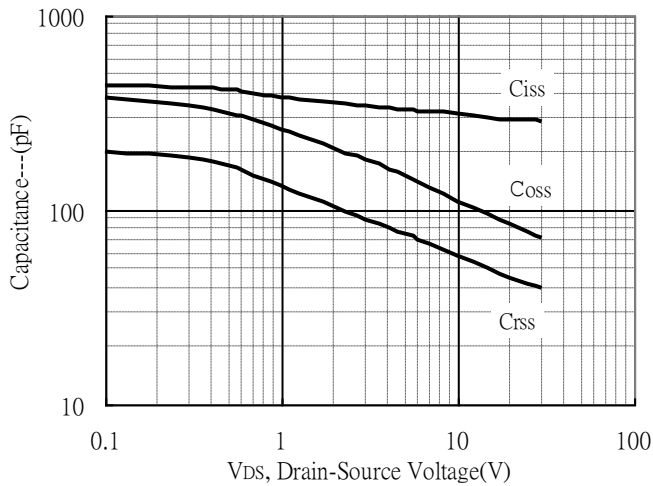


Drain-Source On-State Resistance vs Junction Temperature

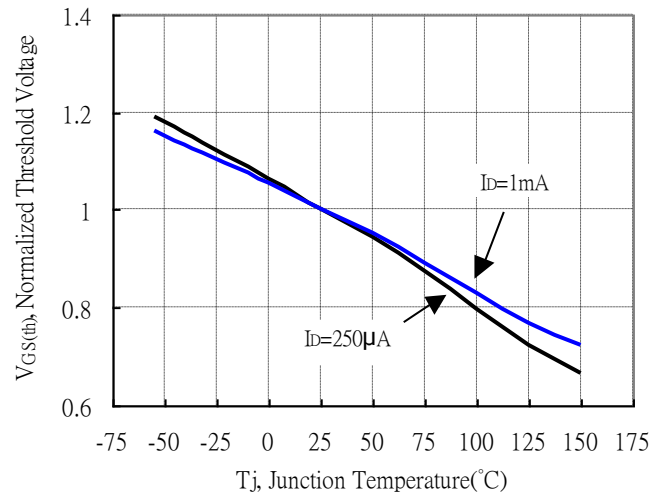


Typical Characteristics(Cont.)

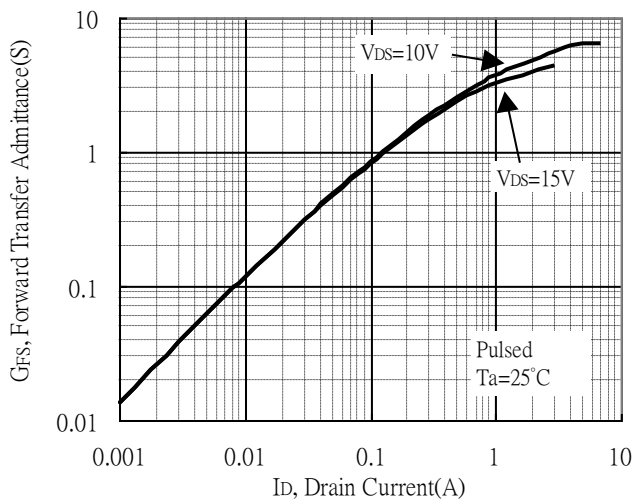
Capacitance vs Drain-to-Source Voltage



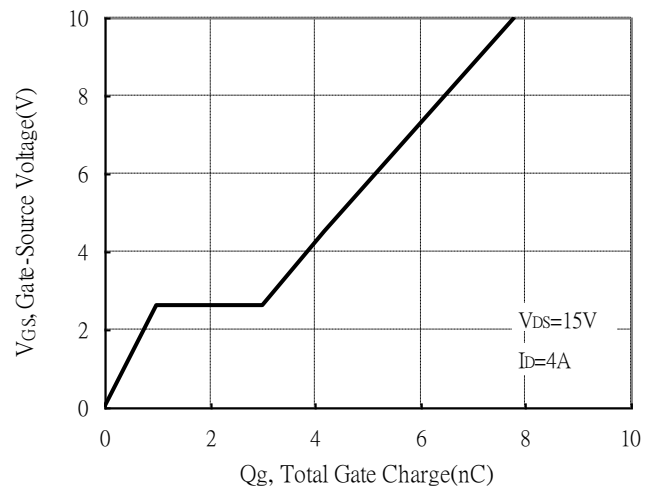
Threshold Voltage vs Junction Temperature



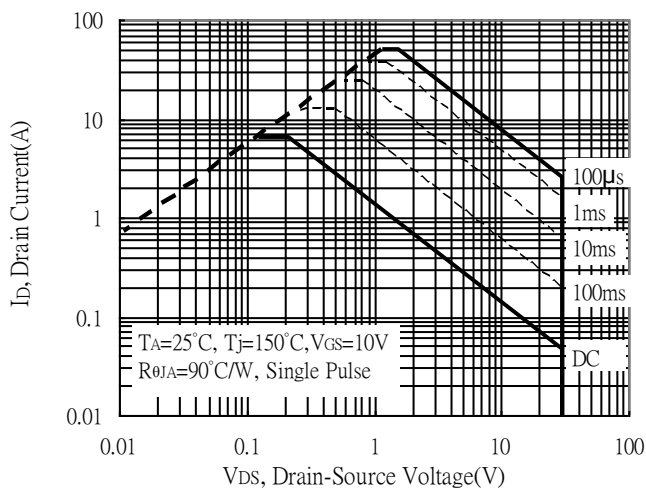
Forward Transfer Admittance vs Drain Current



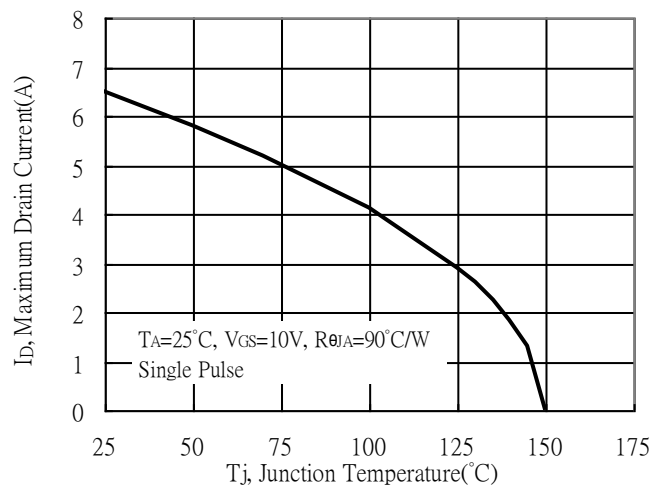
Gate Charge Characteristics



Maximum Safe Operating Area

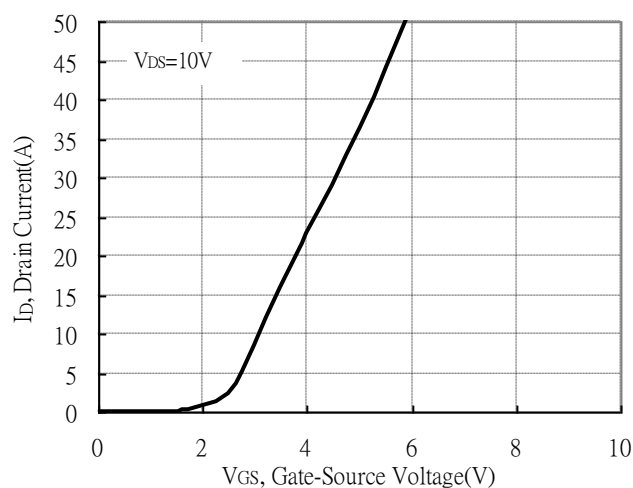


Maximum Drain Current vs Junction Temperature

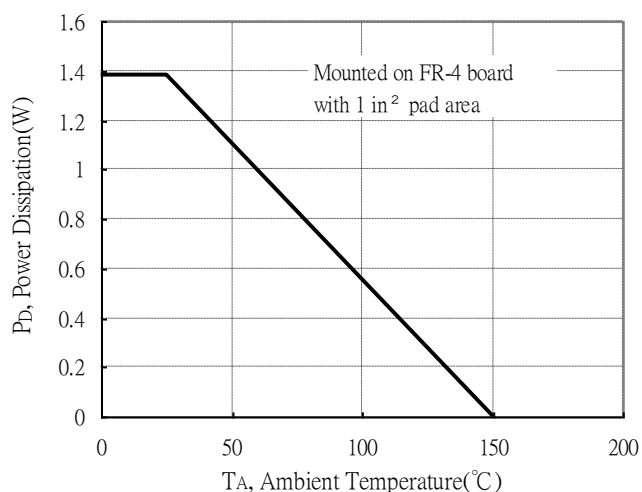


Typical Characteristics(Cont.)

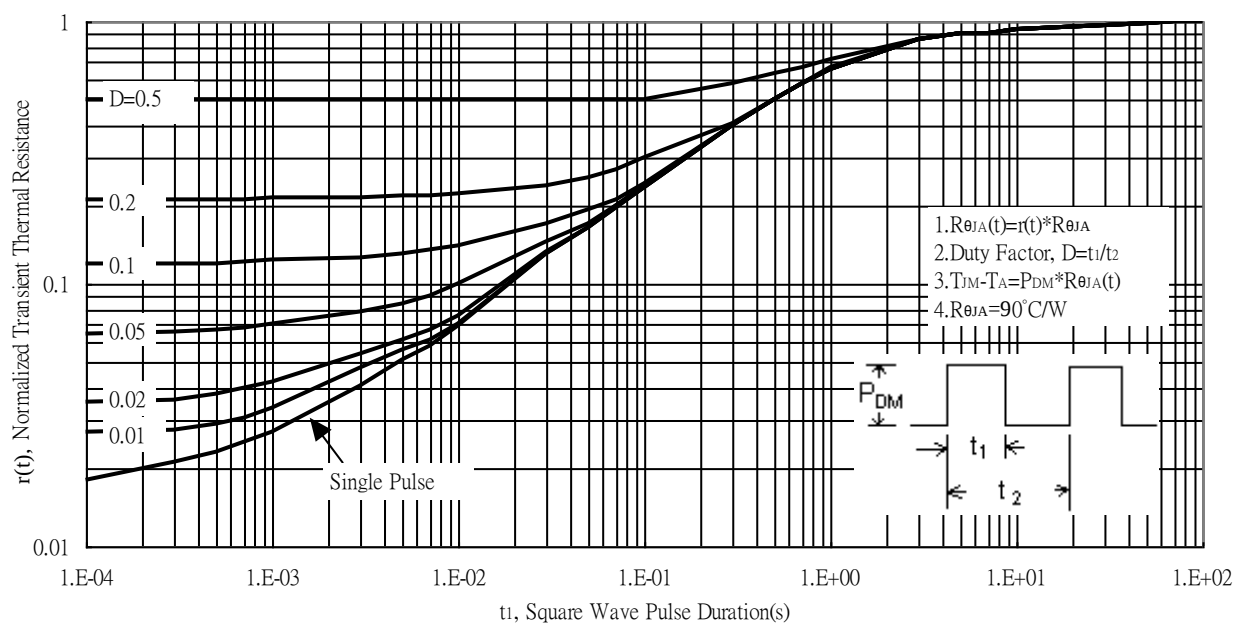
Typical Transfer Characteristics



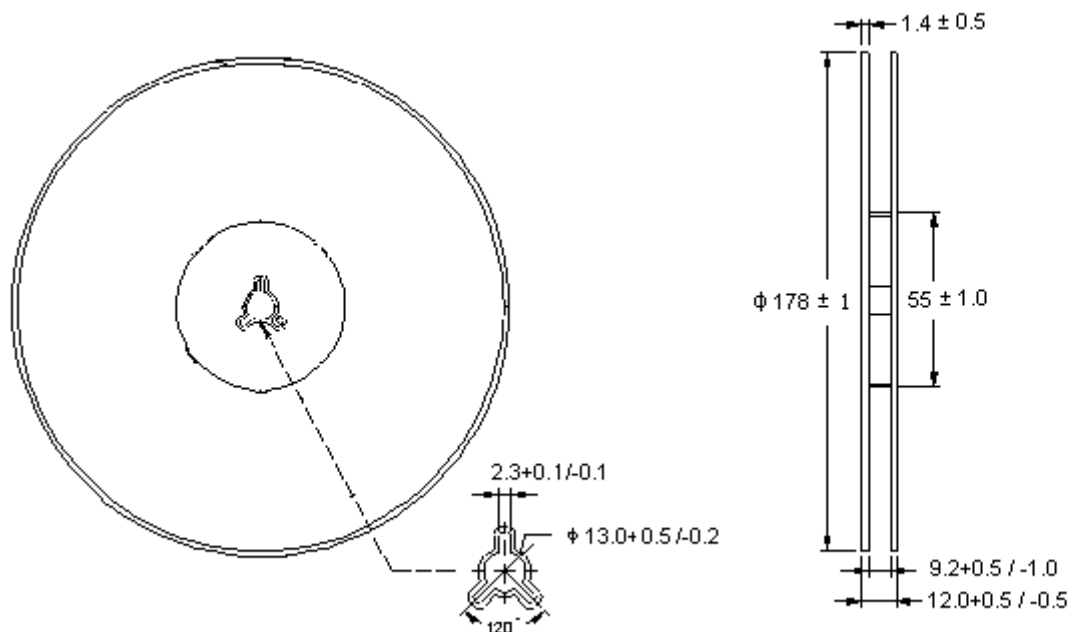
Power Derating Curve



Transient Thermal Response Curves

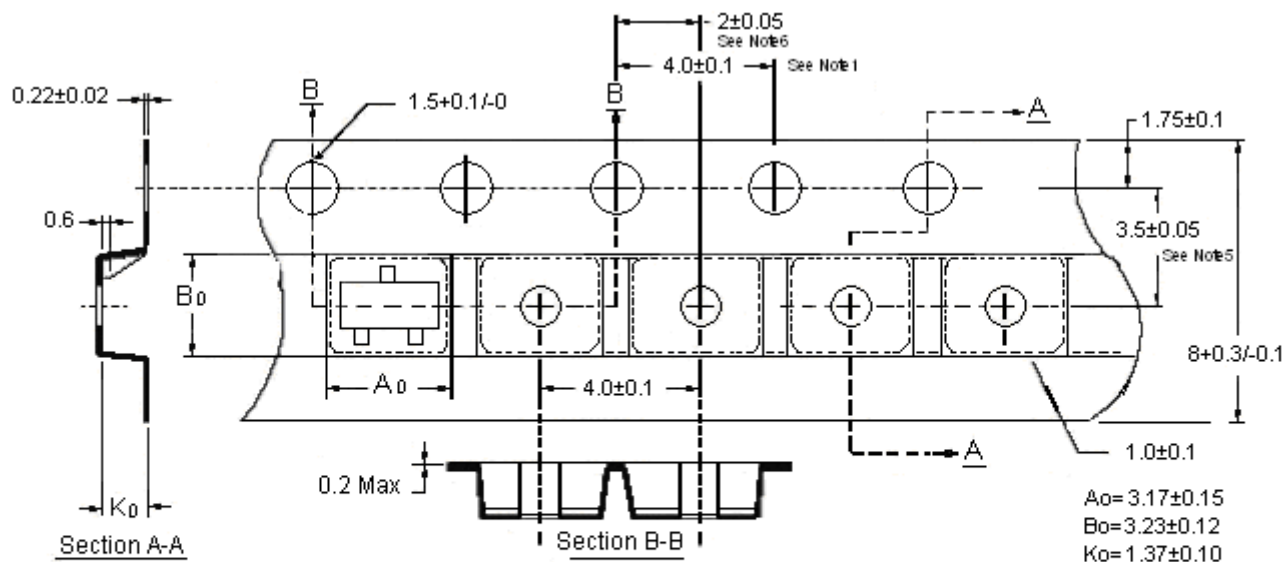


Reel Dimension



Unit: millimeter

Carrier Tape Dimension

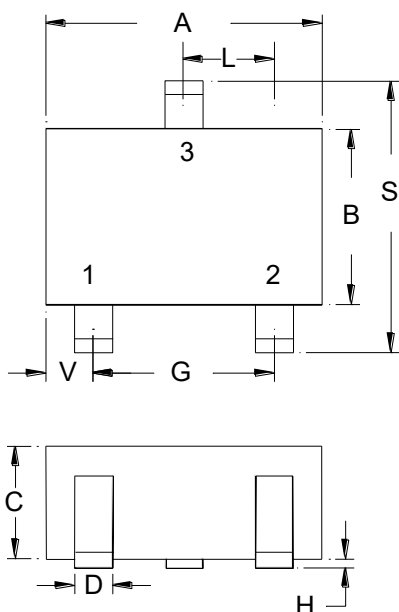


Notes:

1. 10 sprocket hole pitch cumulative tolerance ± 0.2 .
2. Camber not to exceed 1mm in 100mm.
3. Material : conductive Black Polystyrene.
4. A_0 & B_0 measured on a plane 0.3mm above the bottom of the pocket.
5. K_0 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.

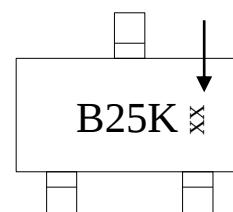
Unit : millimeter

SOT-23 Dimension



Marking:

Date Code



3-Lead SOT-23 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	0.1063	0.1220	2.70	3.10	J	0.0034	0.0079	0.085	0.20
B	0.0472	0.0630	1.20	1.60	K	0.0128	0.0266	0.32	0.67
C	0.0335	0.0512	0.89	1.30	L	0.0335	0.0453	0.85	1.15
D	0.0118	0.0197	0.30	0.50	S	0.0830	0.1161	2.10	2.95
G	0.0669	0.0910	1.70	2.30	V	0.0098	0.0256	0.25	0.65
H	0.0000	0.0040	0.00	0.10					