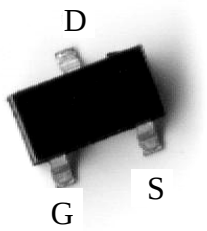
30V N-Channel Enhancement Mode MOSFET

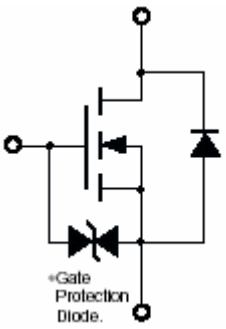
SOT-323



Features:

- Simple drive requirement
- Small package outline
- Pb-free lead plating and halogen-free package

BV_{DSS}	30V
I_D	780mA
R_{DSON}@V_{GS}=4.5V, I_D=400mA	310mΩ(typ)
R_{DSON}@V_{GS}=2.5V,I_D=250mA	440mΩ(typ)
R_{DSON}@V_{GS}=1.8V,I_D=150mA	580mΩ(typ)



G：Gate
S：Source
D：Drain

Ordering Information

Device	Package	Shipping
KWS3078N03	SOT-323 (Pb-free lead plating and halogen-free package)	3000 pcs / Tape & Reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V_{DS}	30	V
Gate-Source Voltage	V_{GS}	±8	
Continuous Drain Current @ T_A=25°C (Note 3)	I_D	780	mA
Continuous Drain Current @ T_A=70°C (Note 3)		620	
Pulsed Drain Current (Notes 1, 2)	I_{DM}	3.5	A
Maximum Power Dissipation@ T_A=25℃	P_D	0.35	W
Linear Derating Factor		0.003	W/°C
ESD susceptibility		1000 (Note 4)	V
Operating Junction and Storage Temperature	Tj, Tstg	-55~+150	°C

Note : 1. Pulse width limited by maximum junction temperature.
2. Pulse width≤ 300μs, duty cycle≤2%.
3. Surface mounted on 1 in² copper pad of FR-4 board, t≤10 seconds.
4. Human body model, 1.5kΩ in series with 100pF.

Thermal Performance

Parameter	Symbol	Limit	Unit
Thermal Resistance, Junction-to-Ambient(PCB mounted) (Note)	Rth,ja	360	°C/W

Note : Surface mounted on 1 in² copper pad of FR-4 board, t≤10 seconds.

Electrical Characteristics (Tj=25°C, unless otherwise noted)

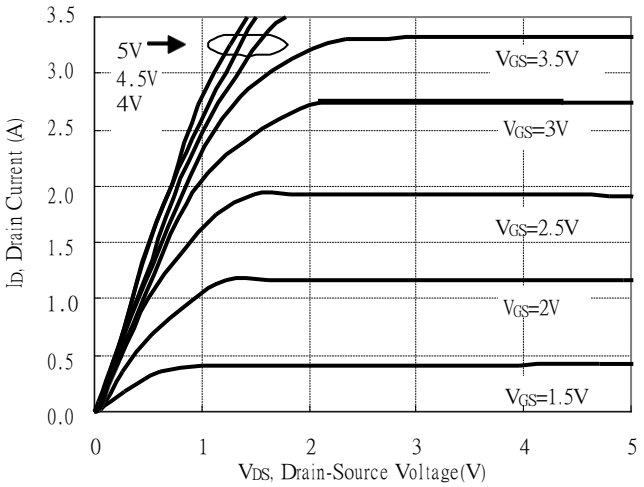
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	30	-	-	V	V_{GS}=0, I_D=250μA
$\Delta BV_{DSS}/\Delta Tj$	-	0.02	-	V/°C	Reference to 25°C, I_D=250μA
$V_{GS(th)}$	0.5	0.75	1.0	V	V_{DS}=V_{GS}, I_D=250μA
I_{GSS}	-	-	±5	μA	V_{GS}=±8V, V_{DS}=0
I_{DSS}	-	-	1		V_{DS}=30V, V_{GS}=0
	-	-	10		V_{DS}=24V, V_{GS}=0 (Tj=70°C)
*$R_{DS(ON)}$	-	310	400	mΩ	V_{GS}=4.5V, I_D=400mA
	-	440	600		V_{GS}=2.5V, I_D=250mA
	-	580	750		V_{GS}=1.8V, I_D=150mA
*G_{FS}	-	1.2	-	S	V_{DS}=5V, I_D=400mA
Dynamic					
Ciss	-	58	-	pF	V_{DS}=15V, V_{GS}=0, f=1MHz
Coss	-	10	-		
Crss	-	6	-		

$t_{d(ON)}$	-	6	-	ns	V_{DS}=15V, I_D=400mA, V_{GS}=4.5V, R_G=6Ω
t_r	-	7	-		
$t_{d(OFF)}$	-	14	-		
t_f	-	4	-		
Qg	-	1.4	-	nC	V_{DS}=24V, I_D=780mA, V_{GS}=4.5V
Qgs	-	0.2	-		
Qgd	-	0.5	-		
Source-Drain Diode					
*V_{SD}	-	0.74	1.2	V	V_{GS}=0V, I_S=100mA

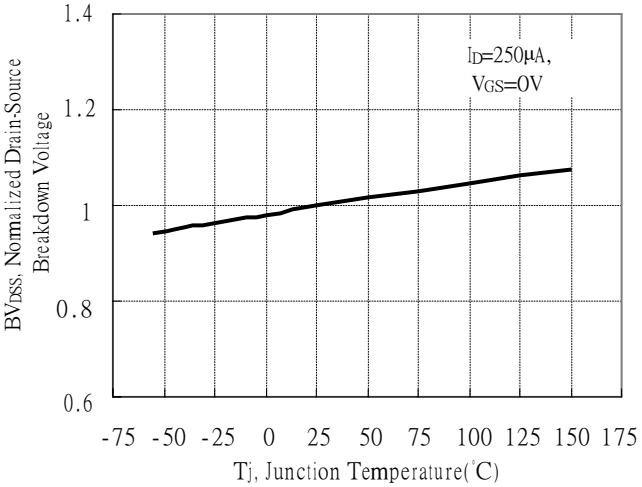
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Typical Characteristics

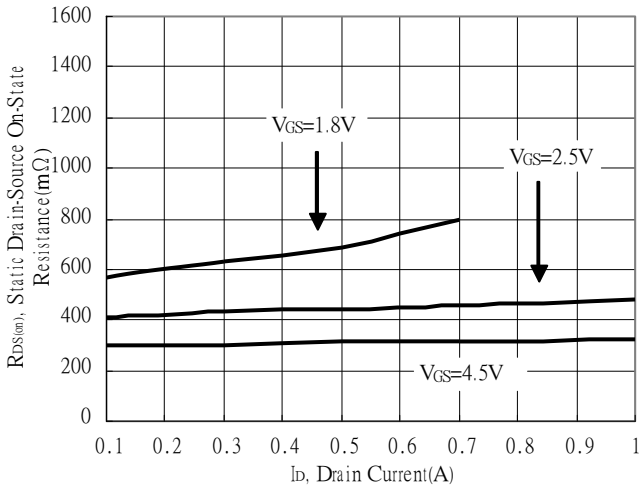
Typical Output Characteristics



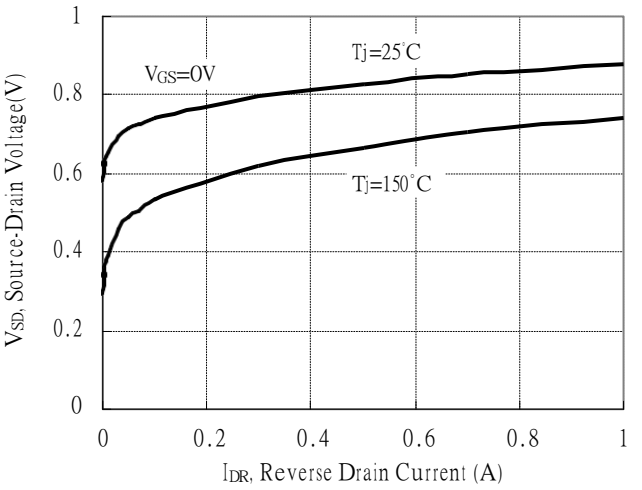
Brekdown Voltage vs Ambient Temperature



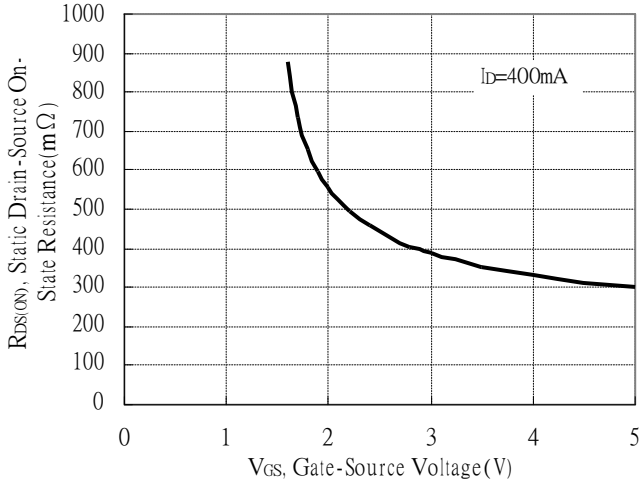
Static Drain-Source On-State resistance vs Drain Current



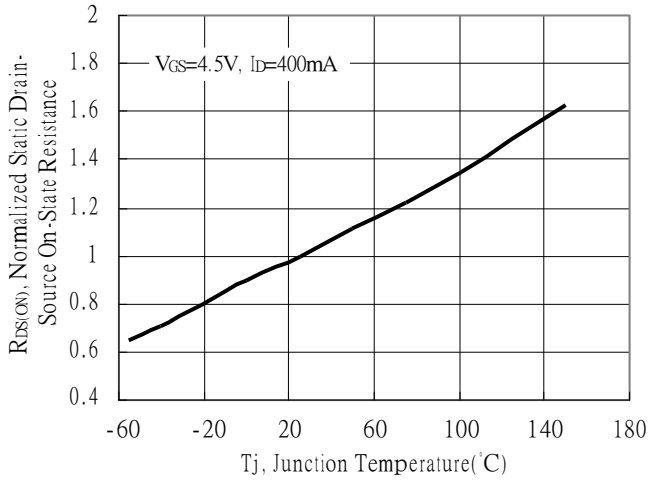
Reverse Drain Current vs Source-Drain Voltage



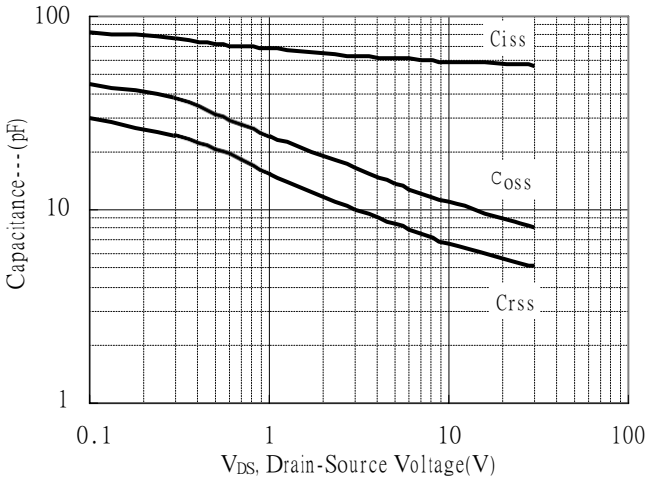
Static Drain-Source On-State Resistance vs Gate-Source Voltage



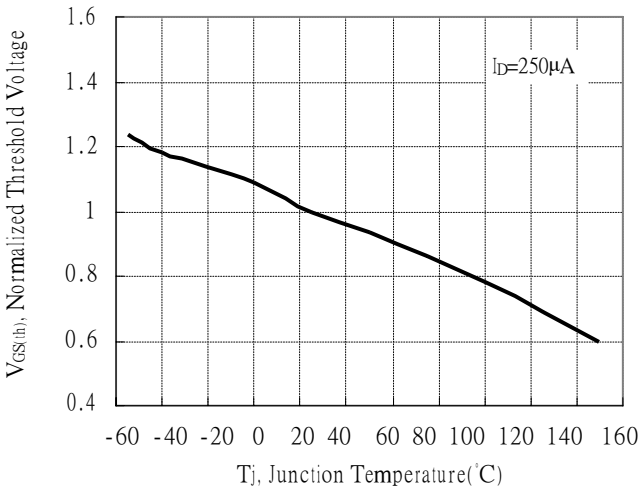
Drain-Source On-State Resistance vs Junction Tempearture



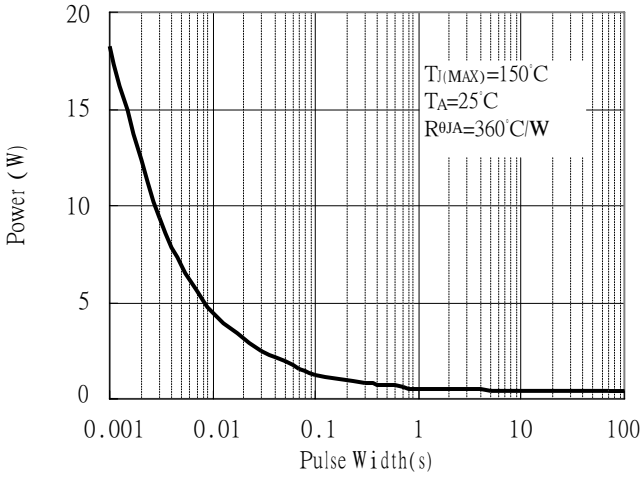
Capacitance vs Drain-to-Source Voltage



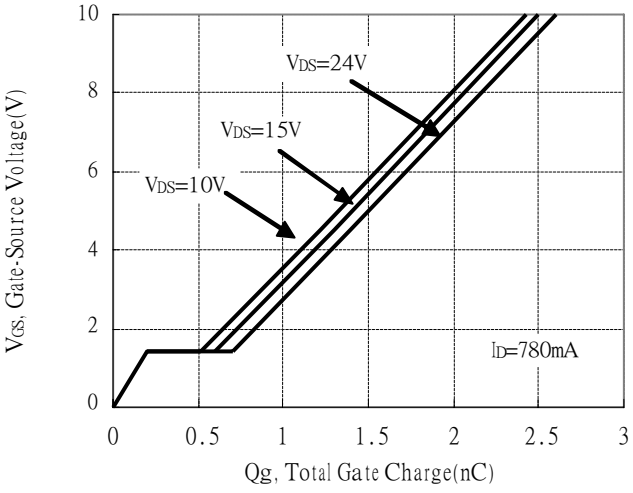
Threshold Voltage vs Junction Tempearture



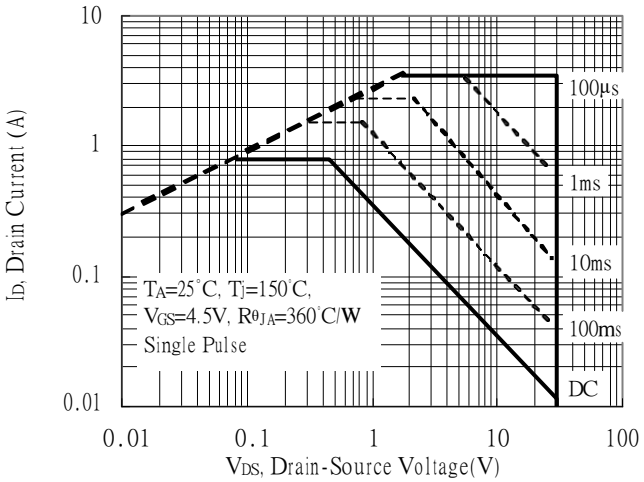
Single Pulse Power Rating, Junction to Ambient
(Note on page 2)



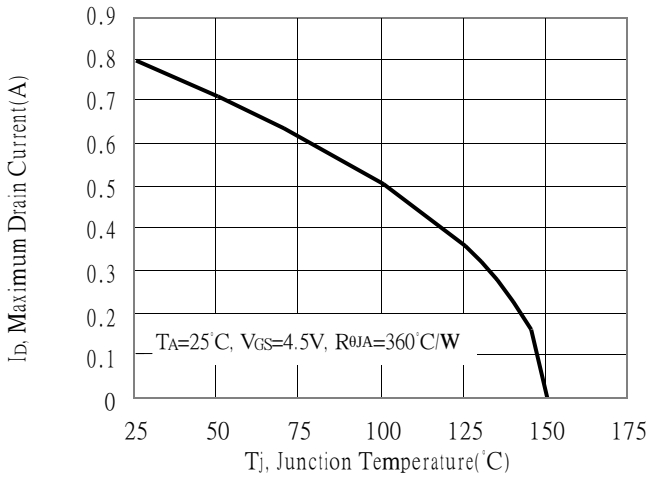
Gate Charge Characteristics



Maximum Safe Operating Area

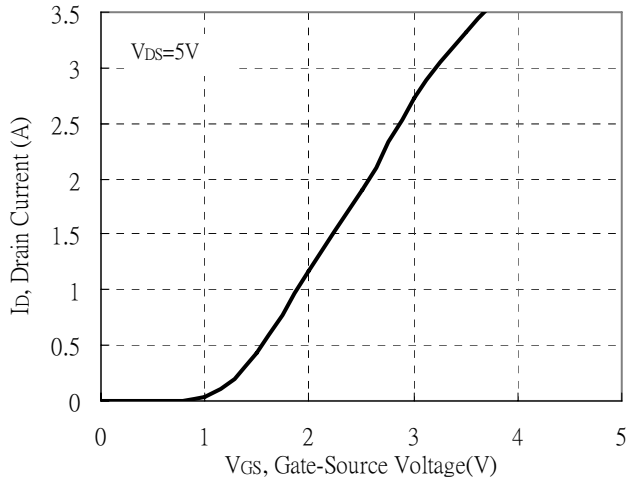


Maximum Drain Current vs JunctionTemperature

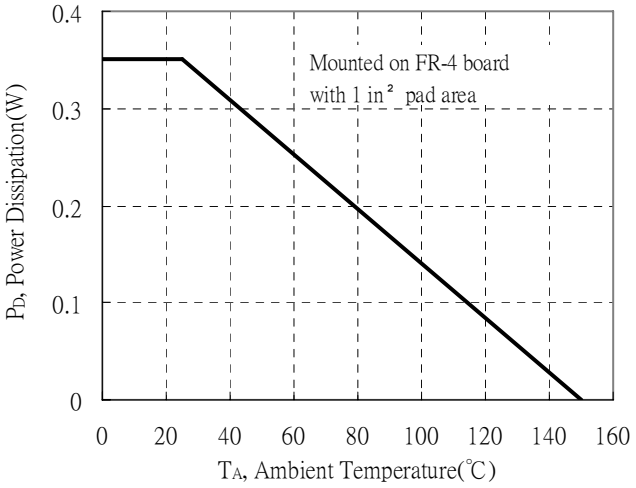


Typical Characteristics(Cont.)

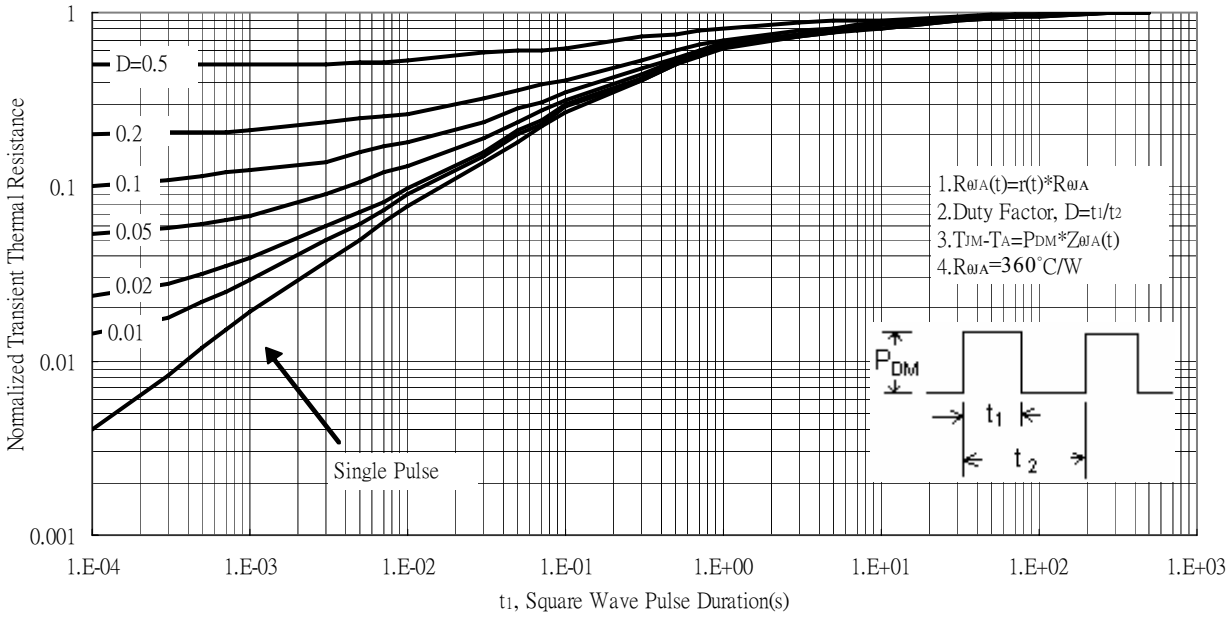
Typical Transfer Characteristics



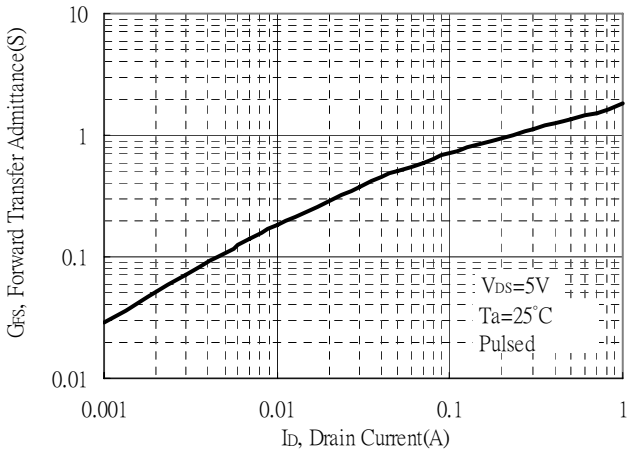
Power Derating Curve



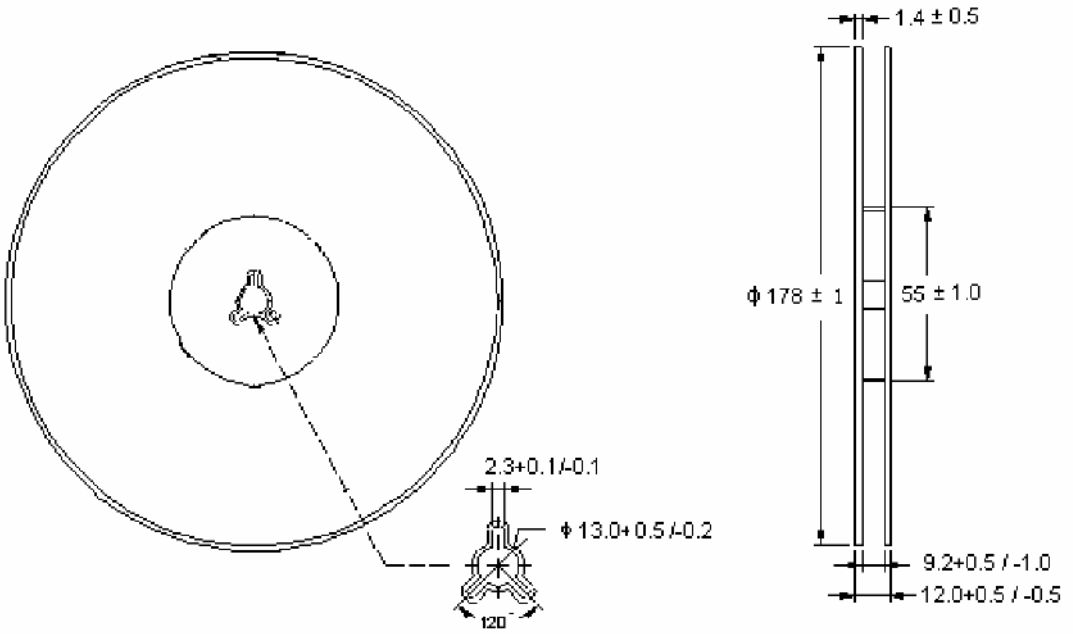
Transient Thermal Response Curves



Forward Transfer Admittance vs Drain Current

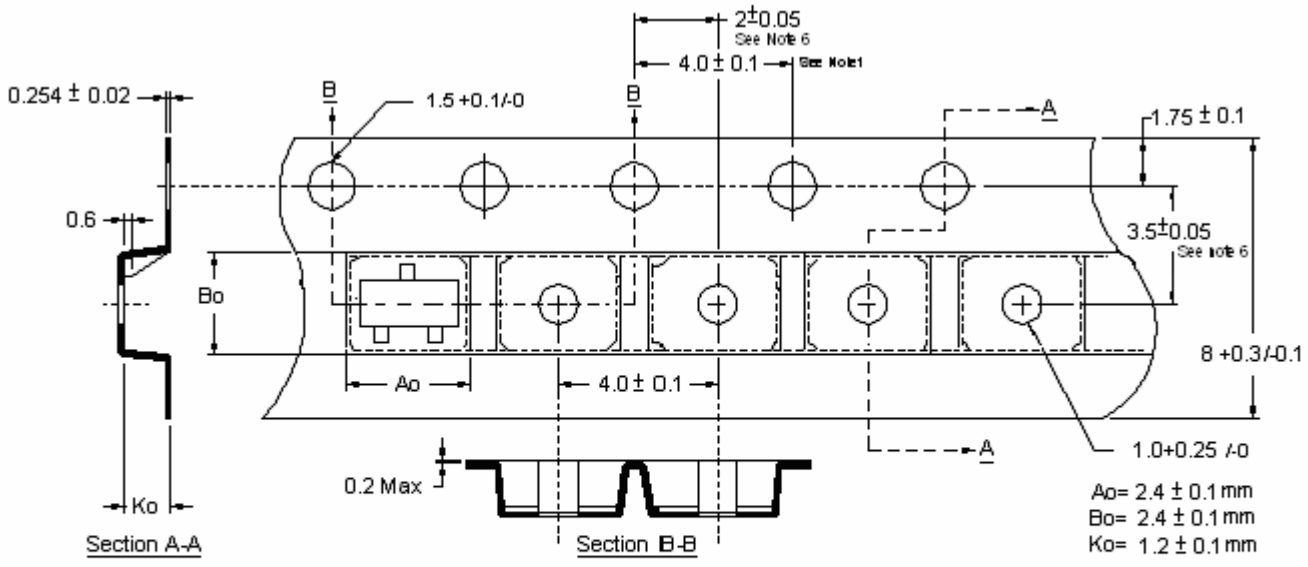


Reel Dimension



Unit: millimeter

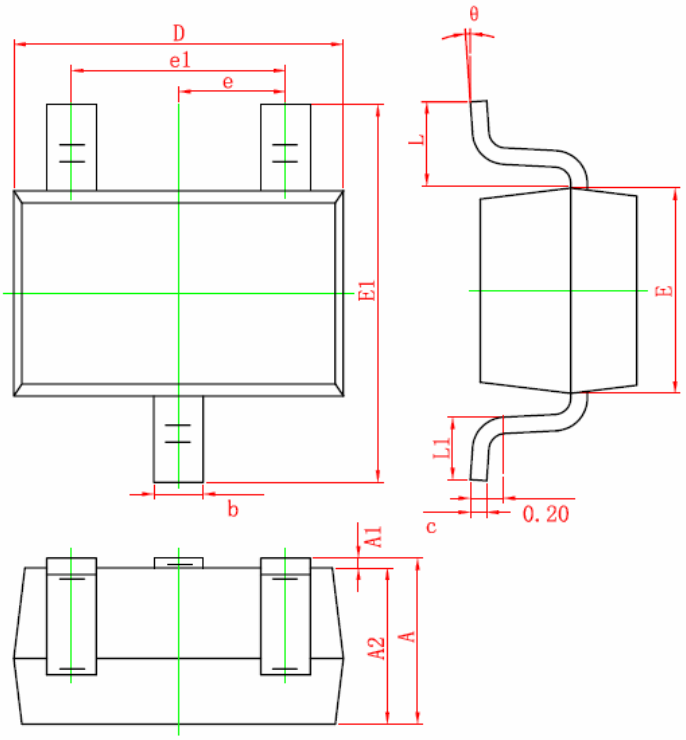
Carrier Tape Dimension



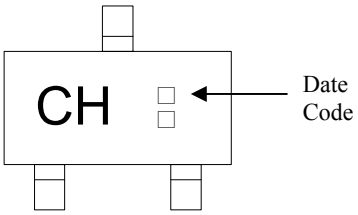
Notes:
1. 10 sprocket hole pitch cumulative tolerace ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material: Conductive Black Advantek Polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of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

Unit : millimeter

SOT-323 Dimension



Marking:



3-Lead SOT-323 Plastic
Surface Mounted Package

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

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					