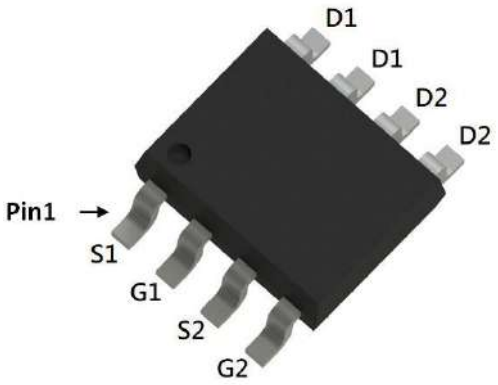
Dual N-Channel Logic Level Enhancement Mode Power MOSFET

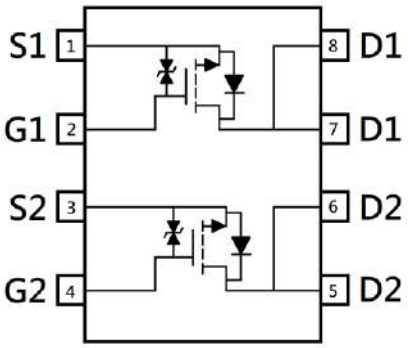
Features:

- Single Drive Requirement
- Low On-resistance
- Fast Switching Characteristic
- ESD Protected
- Pb-free & Halogen-free package

SOP-8



BV_{DSS}	30V
I_D@V_{GS}=10V, T_A=25°C	7A
I_D@V_{GS}=10V, T_A=70°C	5.6A
$R_{DS(ON)}$@V_{GS}=10V, I_D=7A	16 mΩ (typ)
$R_{DS(ON)}$@V_{GS}=4.5V, I_D=7A	22 mΩ (typ)
$R_{DS(ON)}$@V_{GS}=4V, I_D=7A	24 mΩ (typ)



G : Gate S : Source D : Drain

Ordering Information

Device	Package	Shipping
KSCB22A03AK	SOP-8 (Pb-free lead plating & halogen-free package)	4000 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}	±20	
Continuous Drain Current (Note 2)	T_A=25°C, V_{GS}=10V	I_D	7	A
	T_A=70°C, V_{GS}=10V		5.6	
Pulsed Drain Current (Note 1)		I_{DM}	40	
Avalanche Current		I_{AS}	7	
Avalanche Energy @ L=1mH, I_D=7A, R_G=25Ω		E_{AS}	24.5	mJ
Power Dissipation for Dual Operation		P_D	2	W
Power Dissipation for Single Operation			1.6 (Note 2)	
			0.9 (Note 3)	
Operating Junction and Storage Temperature		Tj, Tstg	-55~+150	°C

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	$R_{th,j-c}$	40	°C/W
Thermal Resistance, Junction-to-ambient, max, dual	$R_{th,j-a}$	62.5	
Thermal Resistance, Junction-to-ambient, max , single operation		78 (Note 2)	
		135 (Note 3)	

Note : 1.Pulse width limited by maximum junction temperature.
2. Surface mounted on 1 in^2 pad of 2 oz copper, t≤10s.
3. Surface mounted on minimum copper pad, pulse width≤10s.

Characteristics (T_j=25°C, unless otherwise specified)

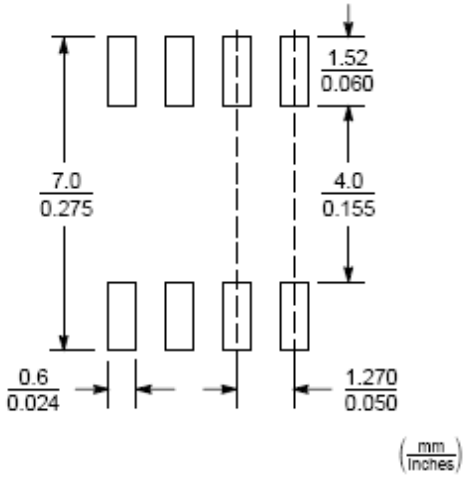
Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV_{DSS}	30	-	-	V	V_{GS}=0V, I_D=250μA
$V_{GS(th)}$	1.0	-	2.5		V_{DS}= V_{GS}, I_D=250μA
G_{FS}	-	8	-	S	V_{DS}=5V, I_D=6A
I_{GSS}	-	-	±10	μA	V_{GS}=±16V, V_{DS}=0V
I_{DSS}	-	-	1		V_{DS}=24V, V_{GS}=0V
*$R_{DS(ON)}$	-	16	21	mΩ	V_{GS}=10V, I_D=7A
	-	22	28		V_{GS}=4.5V, I_D=7A
	-	24	34		V_{GS}=4V, I_D=7A
Dynamic					
Qg (V_{GS}=10V) *1, 2	-	11.6	-	nC	I_D=8A, V_{DS}=15V, V_{GS}=10V
Qg (V_{GS}=5V) *1, 2	-	5.9	-		
Qgs *1, 2	-	1.8	-		
Qgd *1, 2	-	2.7	-		
Ciss	-	467	-	pF	V_{GS}=0V, V_{DS}=15V, f=1MHz
Coss	-	73	-		
Crss	-	59	-		

Characteristics (Cont. T_j=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Dynamic					
$t_{d(ON)}$ *1, 2	-	5.2	-	ns	V_{DS}=15V, I_D=8.3A, V_{GS}=10V, R_G=3Ω
tr *1, 2	-	19.2	-		
$t_{d(OFF)}$ *1, 2	-	34	-		
t_f *1, 2	-	7.8	-		
Source-Drain Diode Ratings and Characteristics					
I_S *1	-	-	2.3	A	
I_{SM} *3	-	-	9.2		
V_{SD} *1	-	0.76	1.0	V	I_S=1A, V_{GS}=0V
trr	-	7.5	-	ns	I_F=8A, dI_F/dt=100A/μs
Qrr	-	3.3	-	nC	

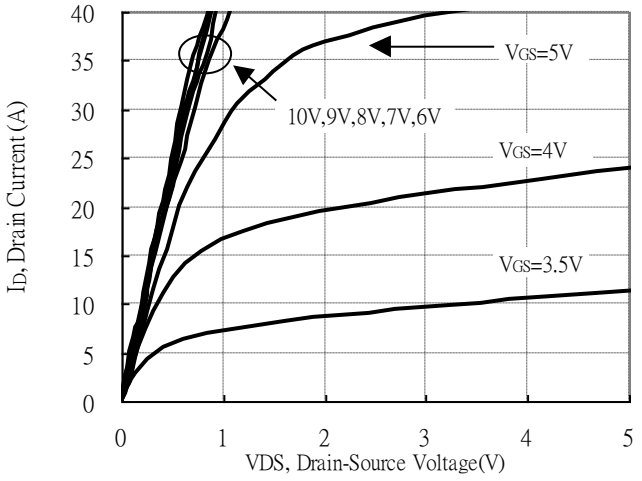
Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%
*2.Independent of operating temperature
*3.Pulse width limited by maximum junction temperature.

Recommended Soldering Footprint

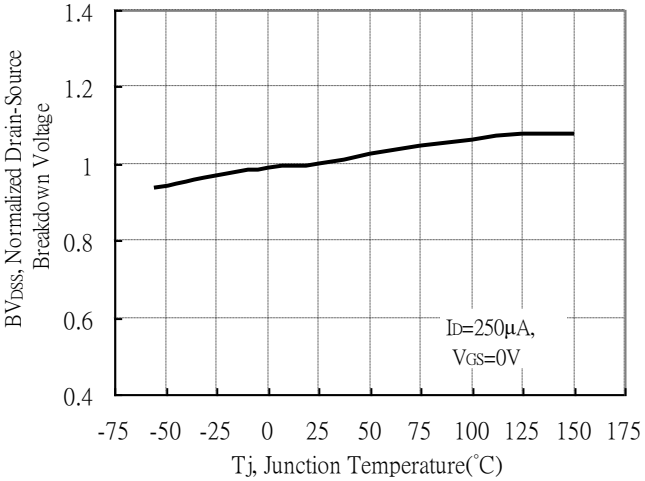


Typical Characteristics

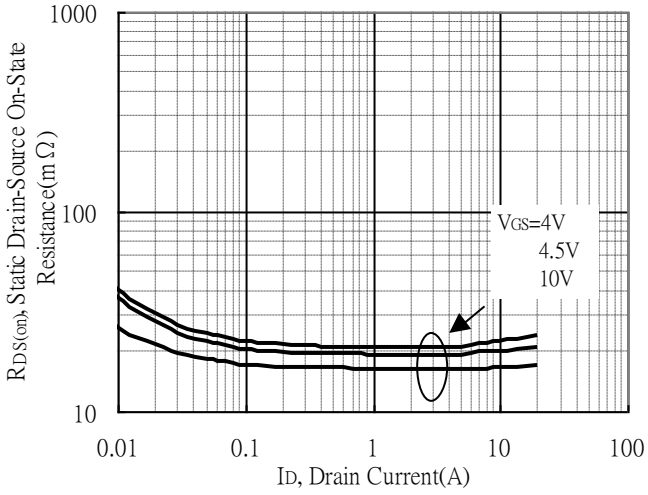
Typical Output Characteristics



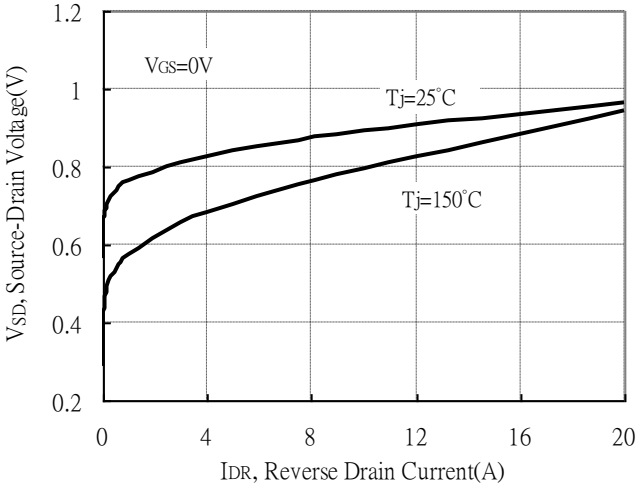
Brekdown Voltage vs Junction Temperature



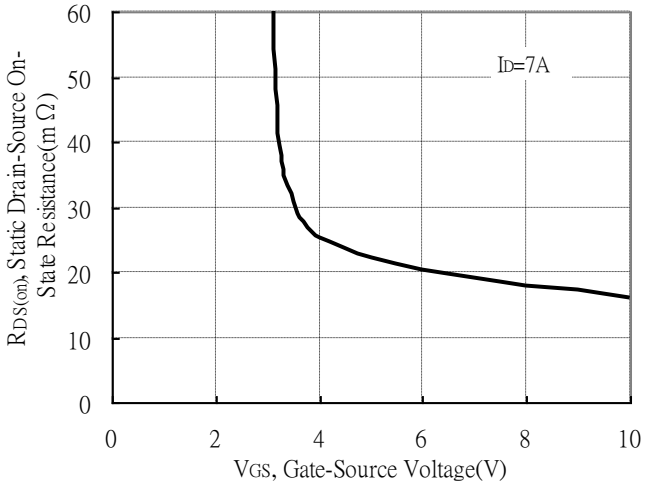
Static Drain-Source On-State resistance vs Drain Current



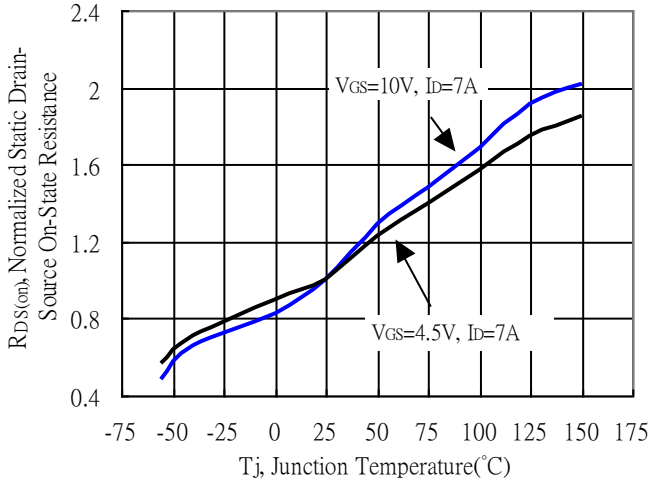
Reverse Drain Current vs Source-Drain Voltage



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

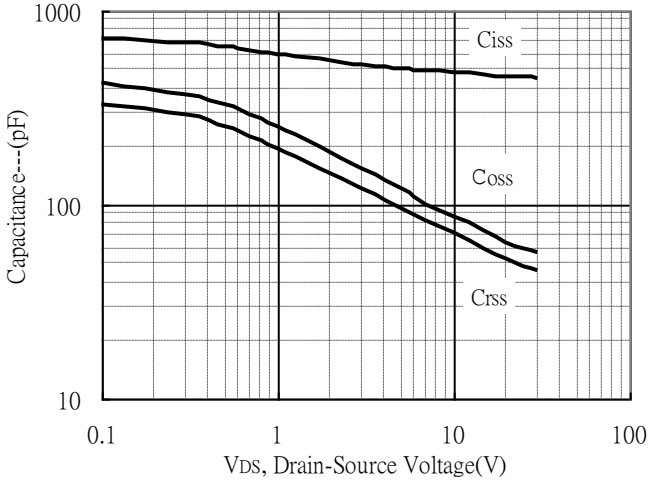


Drain-Source On-State Resistance vs Junction Tempearture

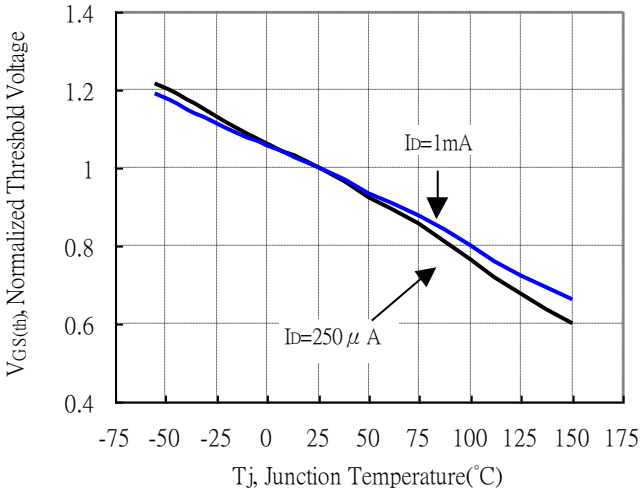


Typical Characteristics (Cont.)

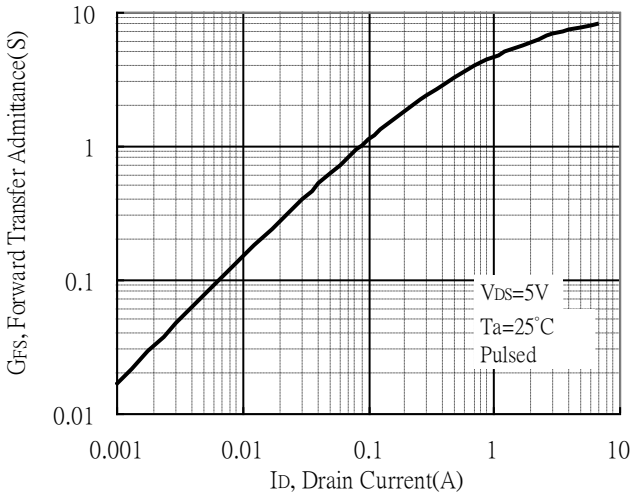
Capacitance vs Drain-to-Source Voltage



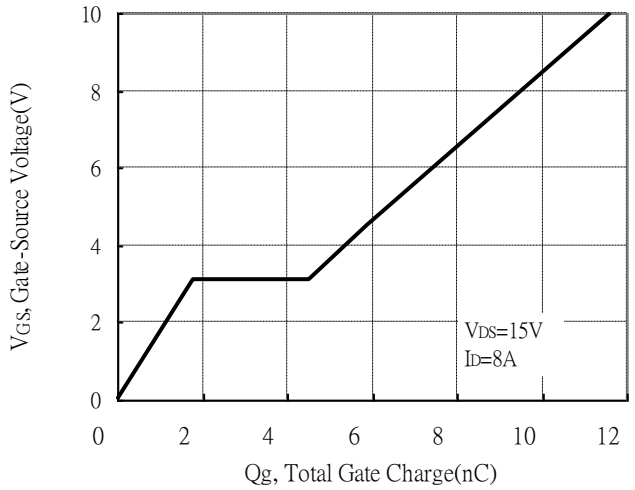
Threshold Voltage vs Junction Tempearture



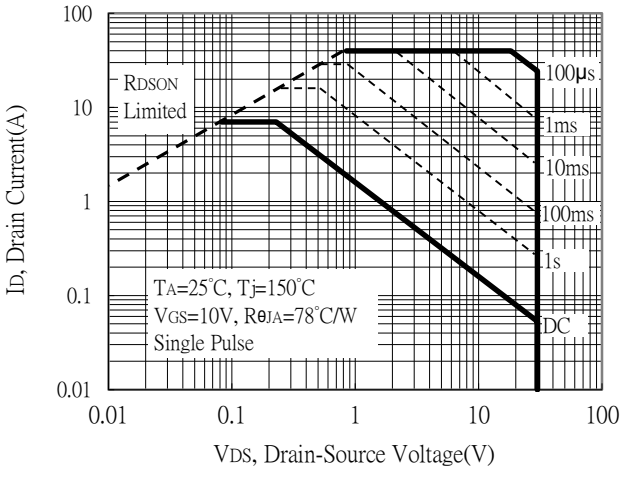
Forward Transfer Admittance vs Drain Current



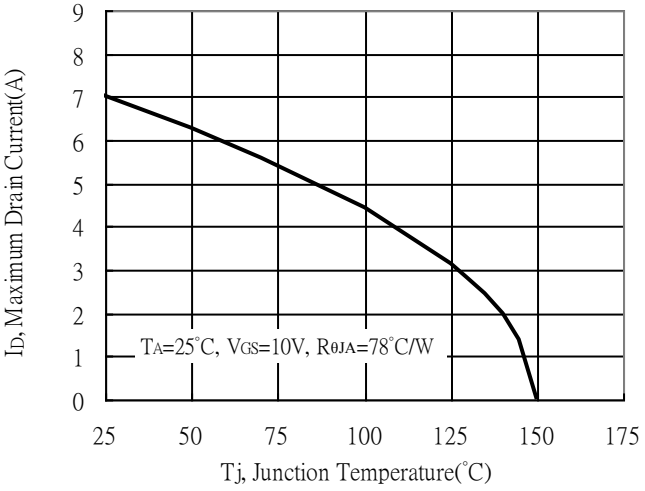
Gate Charge Characteristics



Maximum Safe Operating Area

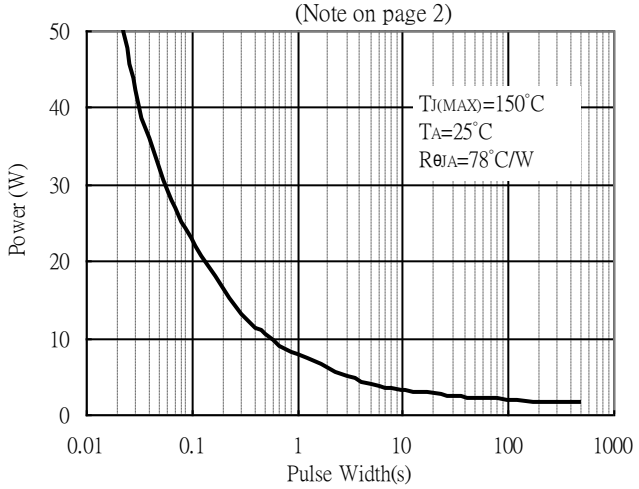


Maximum Drain Current vs Junction Temperature

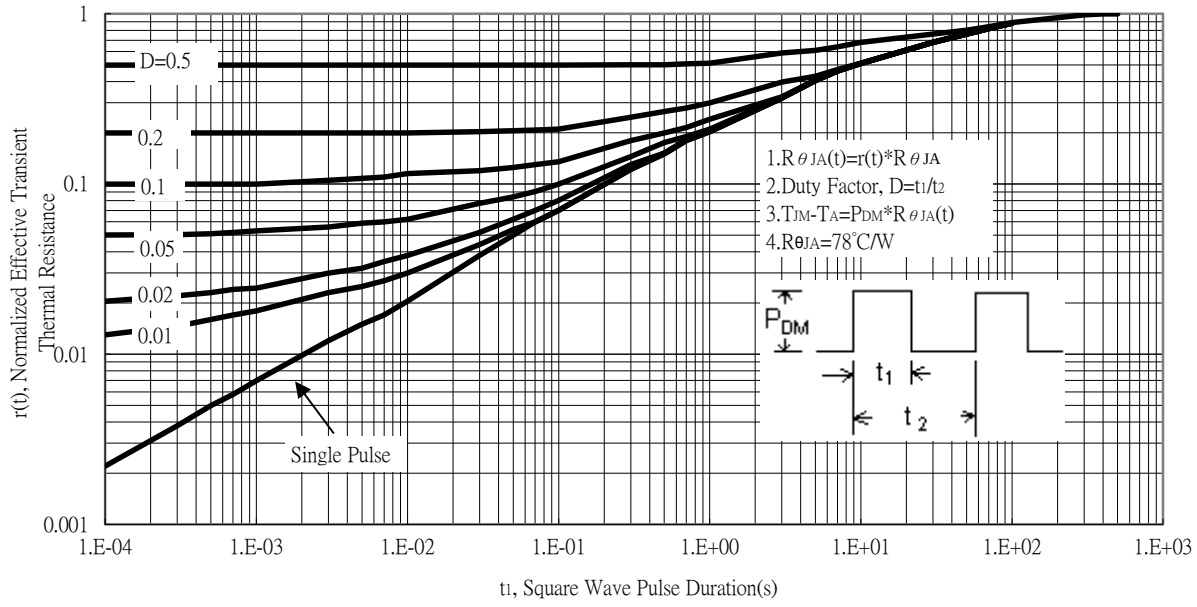


Typical Characteristics (Cont.)

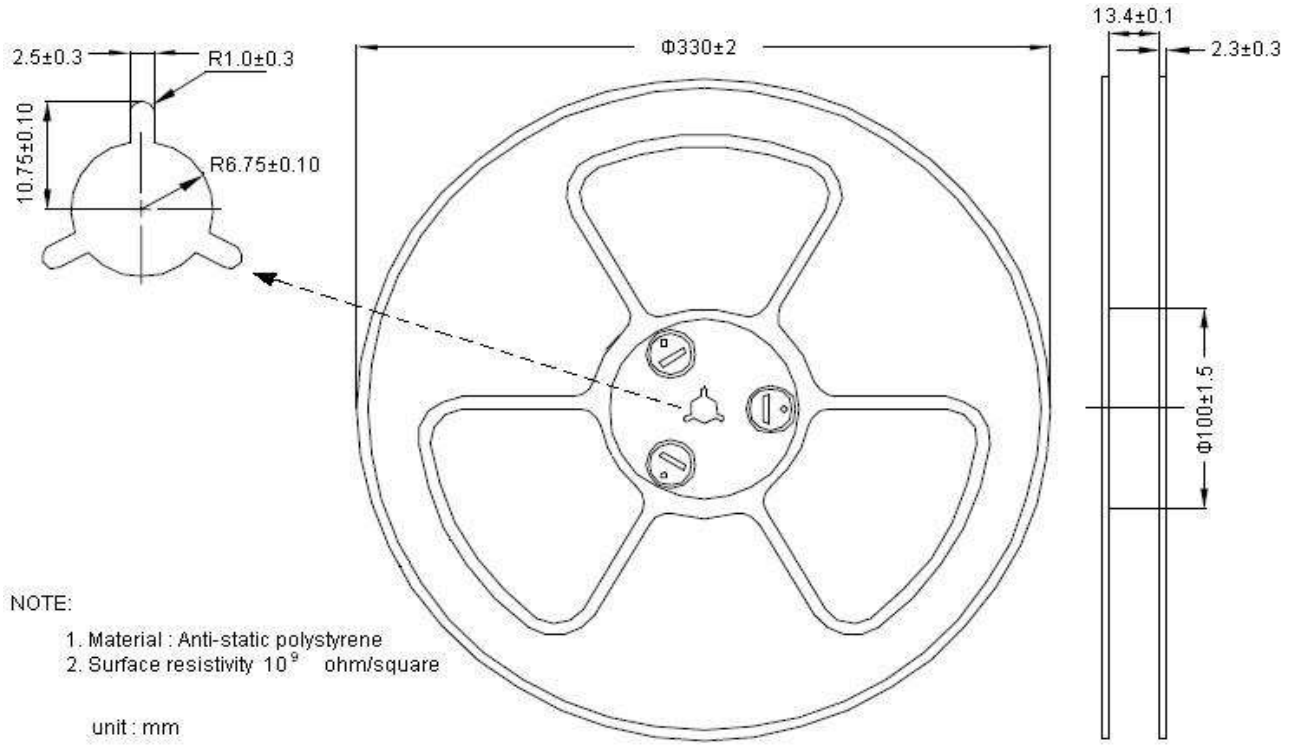
Single Pulse Power Rating, Junction to Ambient
(Note on page 2)



Transient Thermal Response Curves



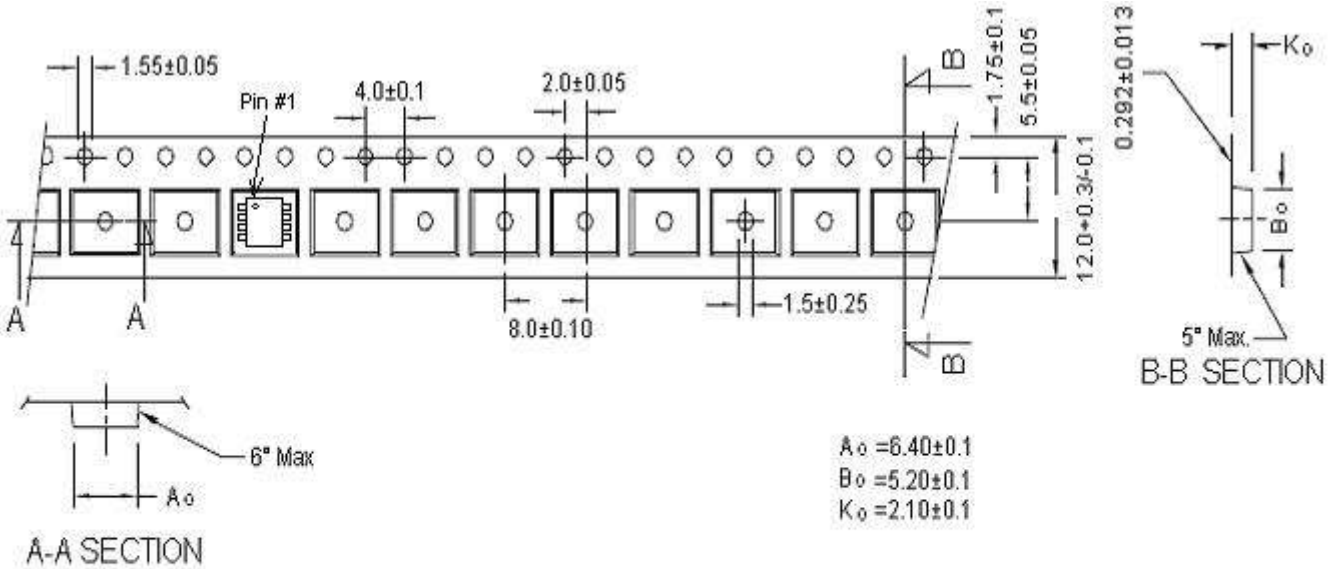
Reel Dimension



NOTE:
1. Material : Anti-static polystyrene
2. Surface resistivity 10^9 ohm/square

unit : mm

Carrier Tape Dimension

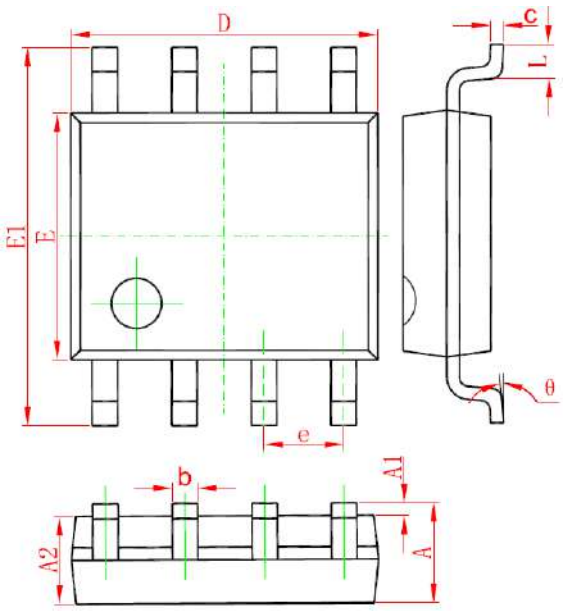


Ao =6.40±0.1
Bo =5.20±0.1
Ko =2.10±0.1

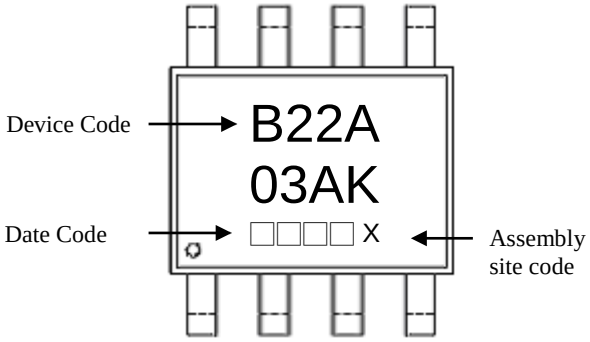
Notes:
1. 10 sprocket hole pitch cumulative tolerance ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material: conductive black polystyrene
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.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

Uni : millimeter

SOP-8 Dimension



Marking:



Date Code(counting from left to right) :
1st code: year code, the last digit of Christian year
2nd code : month code, Jan→A, Feb→B, Mar→C, Apr→D
May→E, Jun→F, Jul→G, Aug→H, Sep→J,
Oct→K, Nov→L, Dec→M
3rd and 4th codes : production serial number, 01~99

Assembly site code : blank→site 1, G →site 2

8-Lead SOP-8 Plastic Package

*: Typical

DIM	Millimeters		Inches		DIM	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	1.350	1.750	0.053	0.069	E	3.800	4.000	0.150	0.157
A1	0.100	0.250	0.004	0.010	E1	5.800	6.200	0.228	0.244
A2	1.350	1.550	0.053	0.061	e	*1.270		*0.050	
b	0.330	0.510	0.013	0.020	L	0.400	1.270	0.016	0.050
c	0.170	0.250	0.006	0.010	θ	0°	8°	0°	8°
D	4.700	5.100	0.185	0.200					