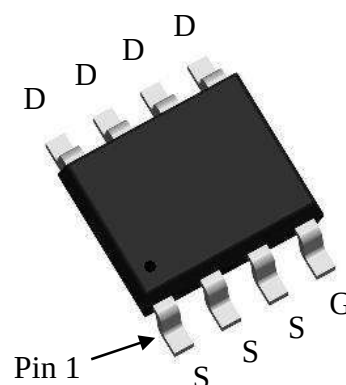


N-Channel Enhancement Mode Power MOSFET

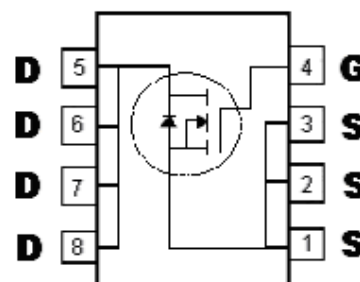
Features:

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

SOP-8



BV_{DSS}	30V
$I_D@V_{GS}=10V, T_C=25^{\circ}C$ (silicon limit)	31A
$I_D@V_{GS}=10V, T_C=25^{\circ}C$ (package limit)	26A
$I_D@V_{GS}=10V, T_A=25^{\circ}C$	14A
$R_{DS(on)(typ)}@V_{GS}=10V, I_D=12A$	5 m Ω (typ)
$R_{DS(on)(typ)}@V_{GS}=4.5V, I_D=9A$	8 m Ω (typ)



G : Gate D : Drain S : Source

Ordering Information

Device	Package	Shipping
KSCB5D8N03R	SOP-8 (RoHS compliant & Halogen-free package)	4000 pcs / Tape & Reel

Absolute Maximum Ratings (T_c=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 @ T _C =25°C, V _{GS} =10V(silicon limit)	I _D	31	A
Continuous Drain Current @ T _C =100°C, V _{GS} =10V(silicon limit)		20	
Continuous Drain Current @ T _C =25°C, V _{GS} =10V(package limit)		26	
Continuous Drain Current @ T _A =25°C, V _{GS} =10V		14	
Continuous Drain Current @ T _A =70°C, V _{GS} =10V		11	
Pulsed Drain Current	I _{DM}	104 *1	
Avalanche Current @ L=0.1mH	I _{AS}	15	
Avalanche Energy @ L=0.5mH	E _{AS}	16	mJ
Total Power Dissipation	P _D	T _C =25°C	W
		T _C =100°C	
		T _A =25 °C	
		T _A =70 °C	
Operating Junction and Storage Temperature	T _j , T _{stg}	-55~+150	°C

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

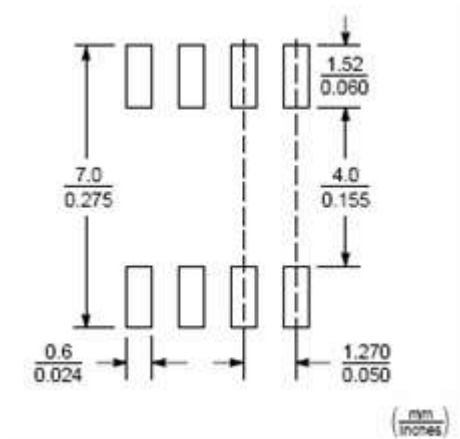
*2. Duty cycle ≤ 1%

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case	R _{θJC}	11.8	°C/W
Thermal Resistance, Junction-to-ambient (Note)	R _{θJA}	60	

Note : 40°C / W when mounted on a 1 in² pad of 2 oz copper, t≤10s; 125 °C/W when mounted on minimum pad.

Recommended Soldering Footprint



Characteristics (T_c=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
G _{FS}	-	0.84	-	S	V _{DS} =5V, I _D =10A
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0V
I _{DSS}	-	-	1	μA	V _{DS} =24V, V _{GS} =0V
	-	-	10		V _{DS} =24V, V _{GS} =0V, T _J =85°C
*R _{DS(ON)}	-	5	6.5	mΩ	V _{GS} =10V, I _D =12A
	-	8	11		V _{GS} =4.5V, I _D =9A
Dynamic					
Q _g *1, 2	-	7.3	-	nC	V _{DS} =15V, V _{GS} =4.5V, I _D =12A
Q _{gs} *1, 2	-	2.8	-		
Q _{gd} *1, 2	-	3	-		
C _{iss}	-	767	-	pF	V _{DS} =15V, V _{GS} =0V, f=1MHz
C _{oss}	-	527	-		
C _{rss}	-	66	-		
t _{d(ON)} *1, 2	-	15	-	ns	V _{DS} =15V, V _{GS} =4.5V, I _D =12A, R _{GS} =6Ω
t _r *1, 2	-	26	-		
t _{d(OFF)} *1, 2	-	18	-		
t _f *1, 2	-	13	-		
R _g	-	0.7	-	Ω	f=1MHz
Source-Drain Diode Ratings and Characteristics					
I _S *1	-	-	14	A	
I _{SM} *3	-	-	56		
V _{SD} *1	-	0.84	1.2	V	I _S =10A, V _{GS} =0V
t _{rr}	-	19	-	ns	I _F =12A, dI _F /dt=100A/μs
Q _{rr}	-	7	-	nC	

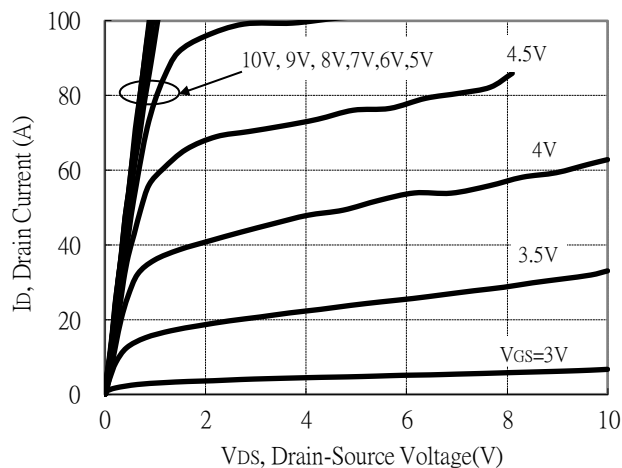
Note : *1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

*2.Independent of operating temperature

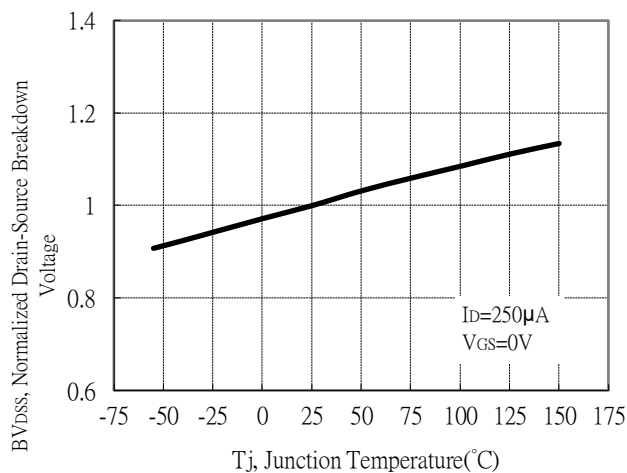
*3.Pulse width limited by maximum junction temperature.

Typical Characteristics

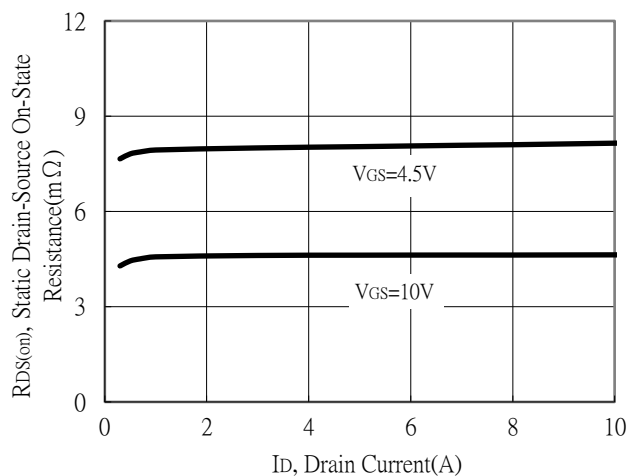
Typical Output Characteristics



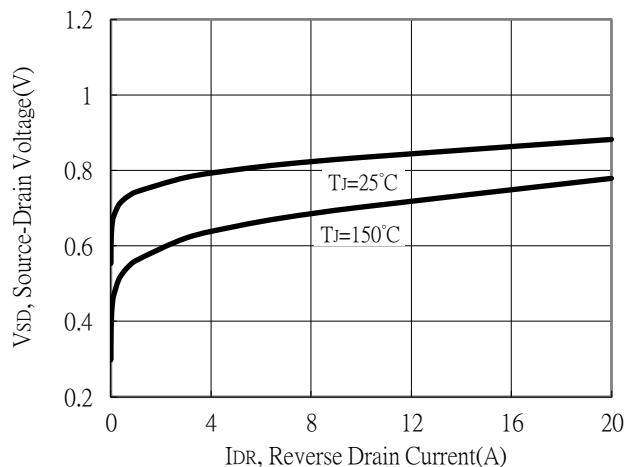
Breakdown Voltage vs Ambient Temperature



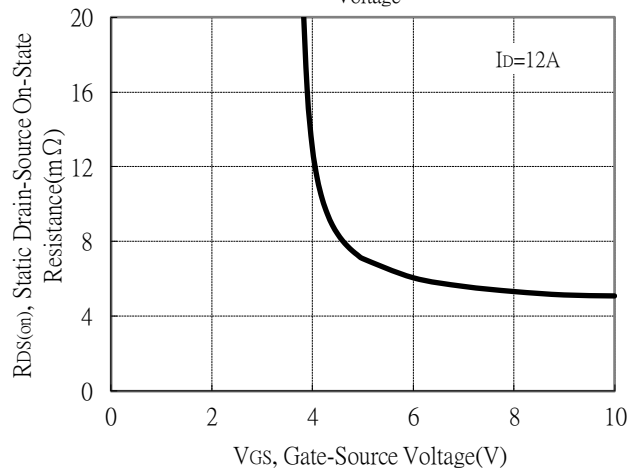
Static Drain-Source On-State resistance vs Drain Current



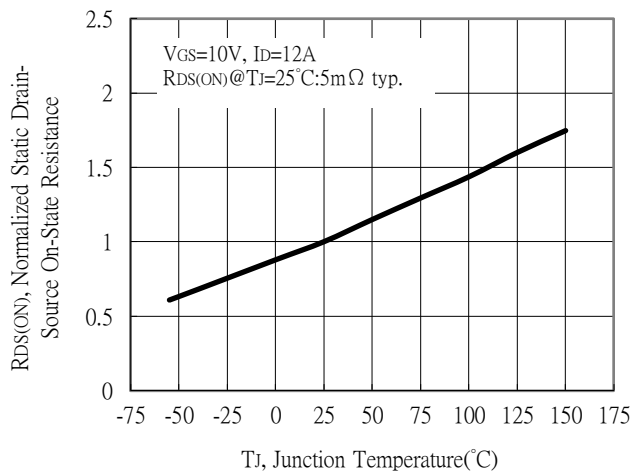
Reverse Drain Current vs Source-Drain Voltage



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

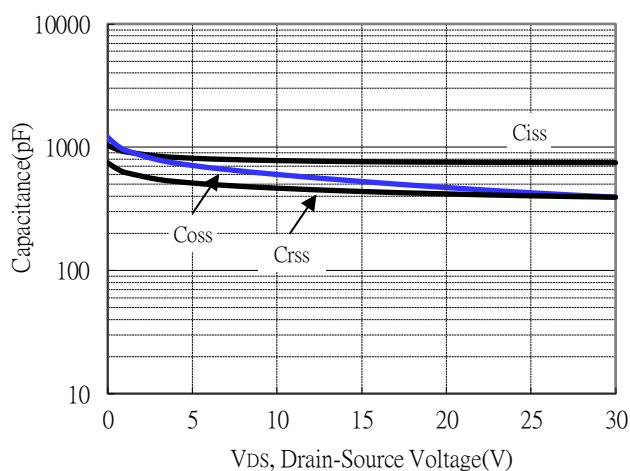


Drain-Source On-State Resistance vs Junction Temperature

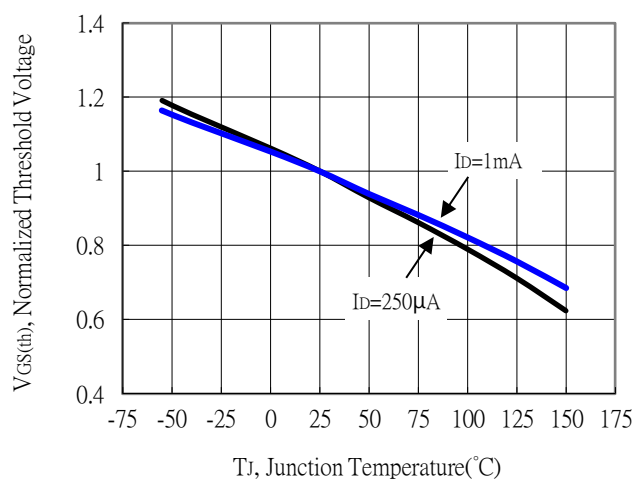


Typical Characteristics(Cont.)

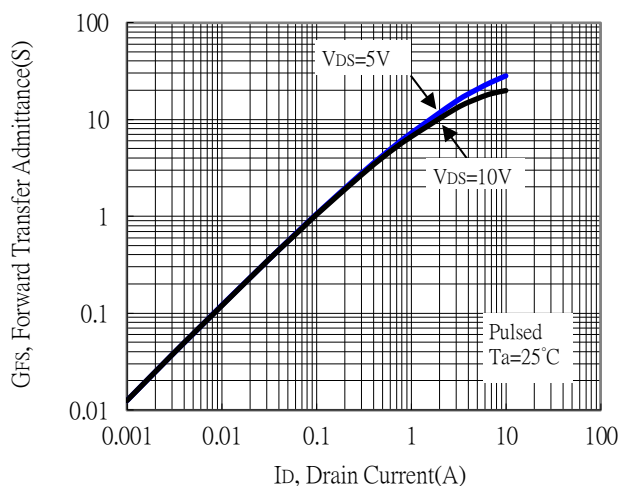
Capacitance vs Drain-to-Source Voltage



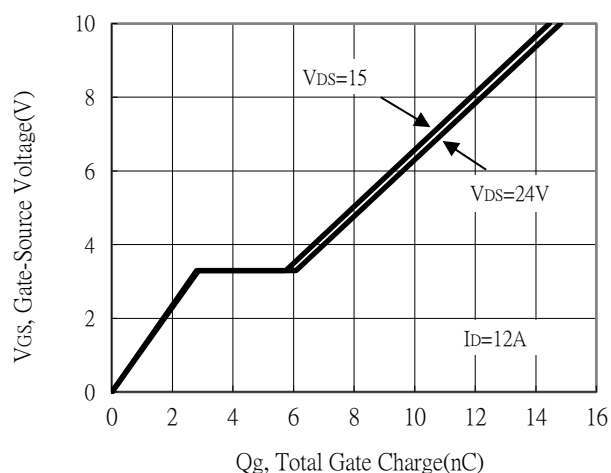
Threshold Voltage vs Junction Temperature



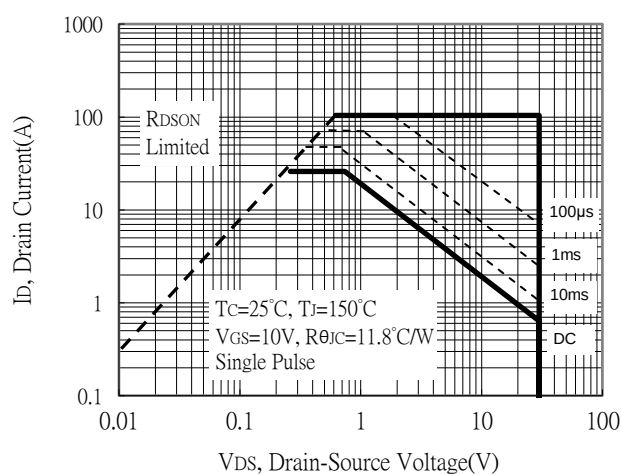
Forward Transfer Admittance vs Drain Current



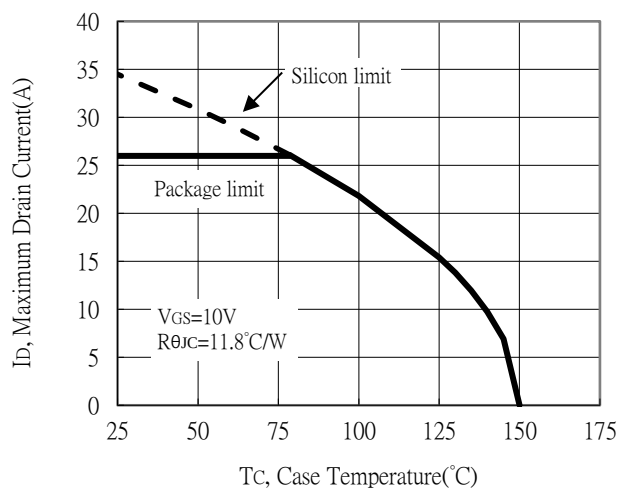
Gate Charge Characteristics



Maximum Safe Operating Area

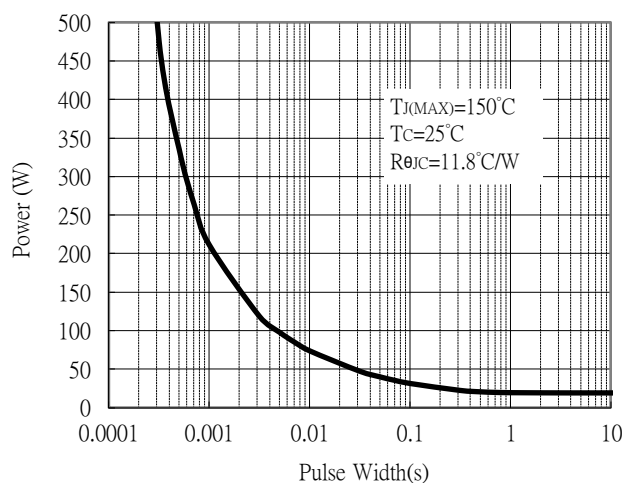


Maximum Drain Current vs Case Temperature

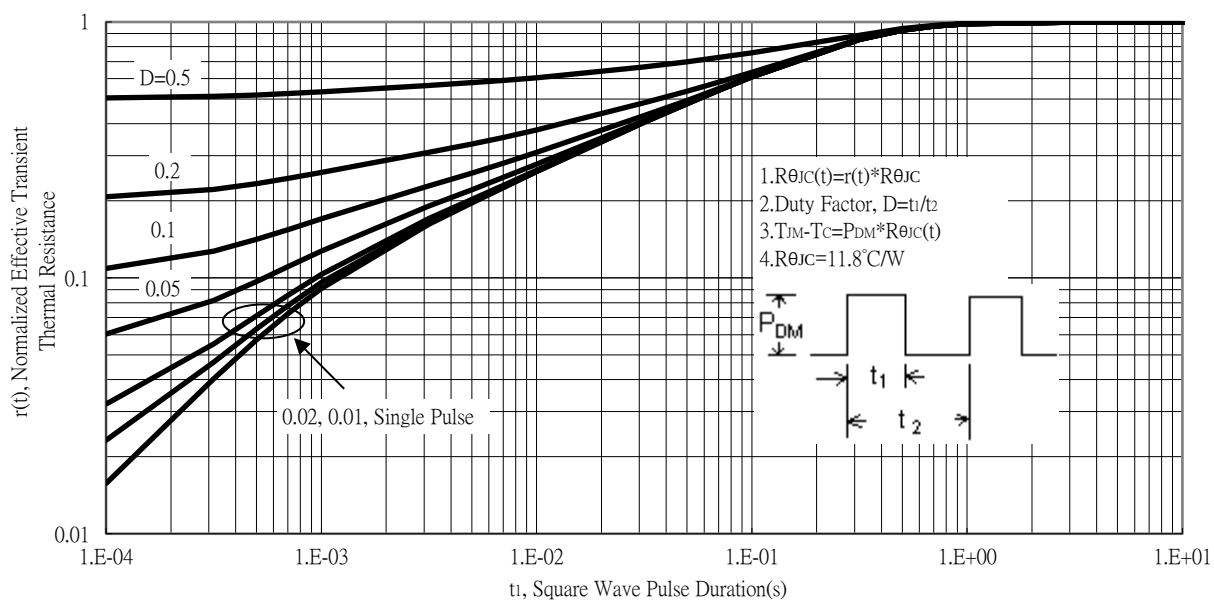


Typical Characteristics(Cont.)

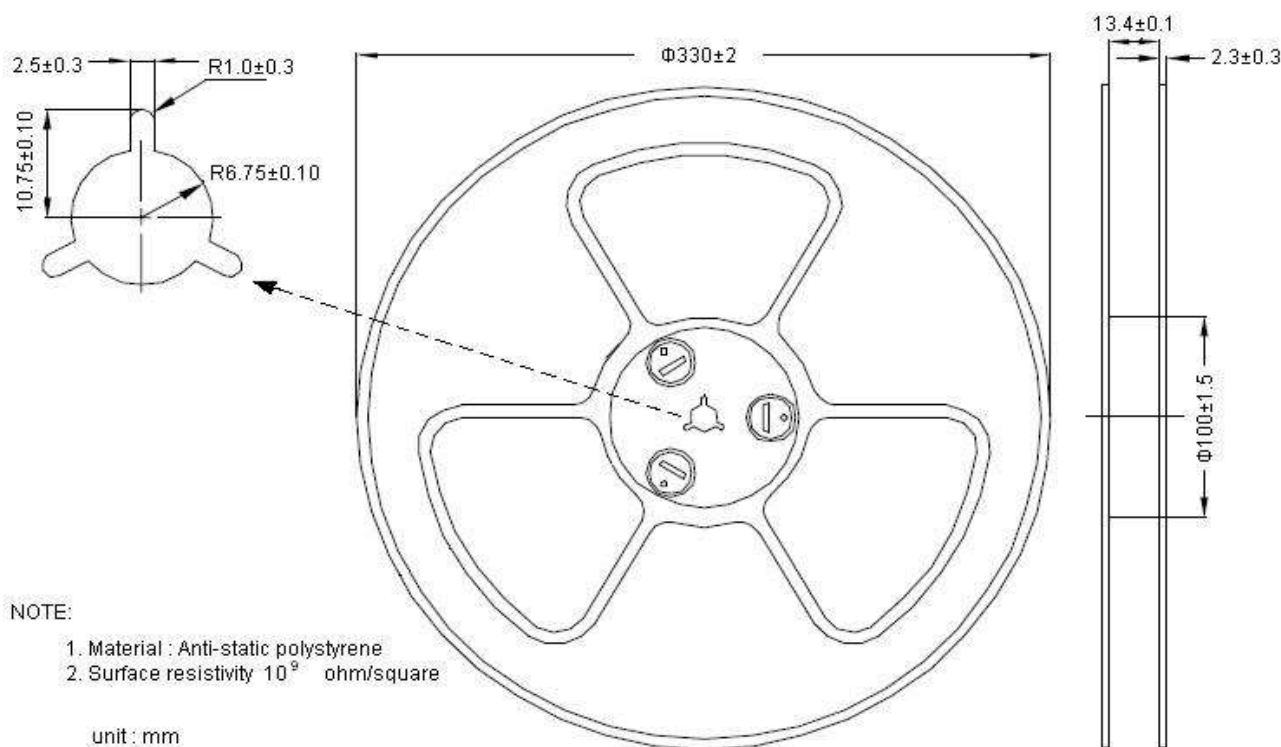
Single Pulse Power Rating, Junction to Case



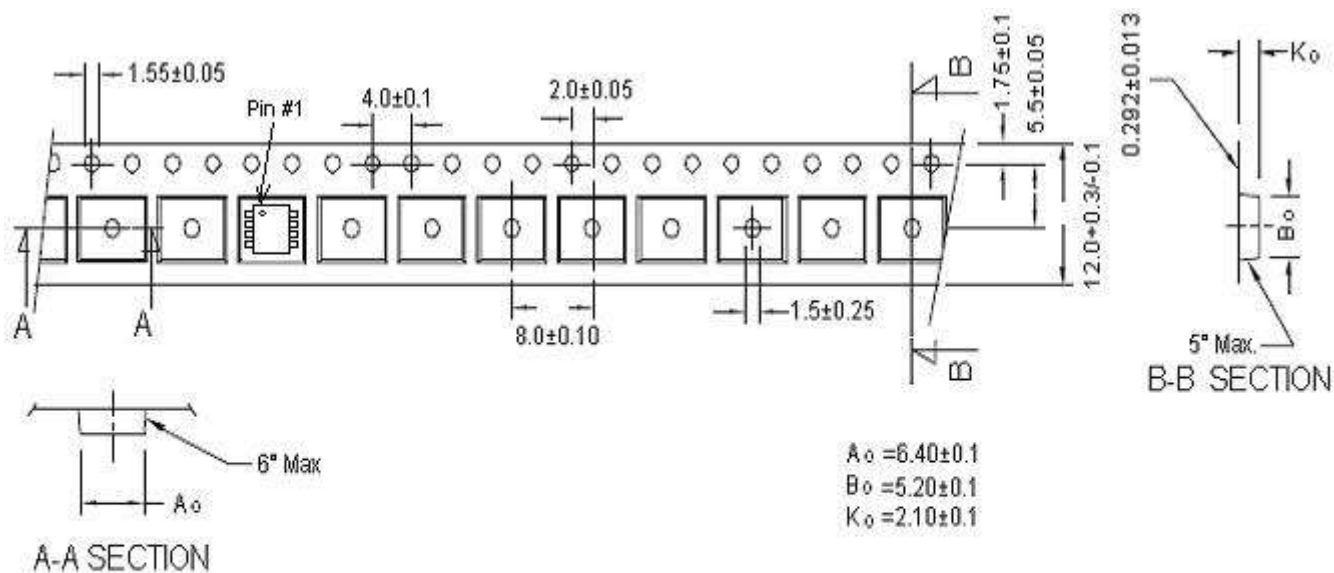
Transient Thermal Response Curves



Reel Dimension



Carrier Tape Dimension

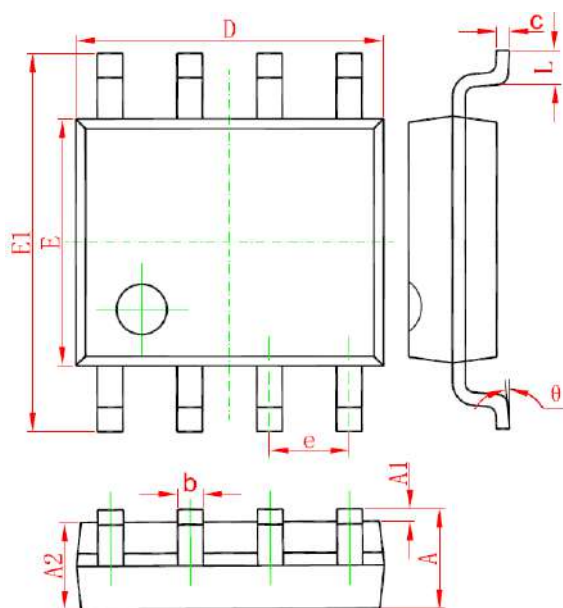


Notes:

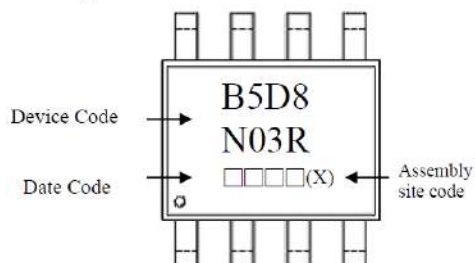
1. 10 sprocket hole pitch cumulative tolerance ± 0.2 .
2. Camber not to exceed 1mm in 100mm.
3. Material: conductive black polystyrene
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.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

Unit : millimeter

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					