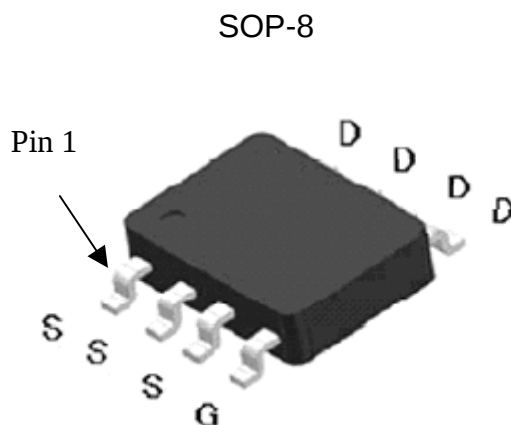


N-Channel Enhancement Mode Power MOSFET

Description :

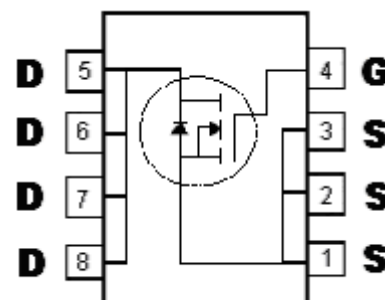
The KSCB4D0N03B is a N-channel enhancement-mode MOSFET, providing the designer with the best combination of fast switching, ruggedized device design, low on-resistance and cost effectiveness.

The SOP-8 package is universally preferred for all commercial-industrial surface mount applications and suited for low voltage applications such as DC/DC converters.



Features:

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



G : Gate
D : Drain
S : Source

BV_{DSS}	30V
I_D @ T_A=25°C, V_{GS}=10V	17.5A
I_D @ T_C=25°C, V_{GS}=10V	22.0A
R_{DS(ON)}@V_{GS}=10V, I_D=18A	4.2 mΩ (typ)
R_{DS(ON)}@V_{GS}=4.5V, I_D=10A	6.0mΩ (typ)

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		I _D	22	A
Continuous Drain Current @ T _C =100°C, V _{GS} =10V			13.9	
Continuous Drain Current @ T _A =25°C, V _{GS} =10V		I _{DSM}	17.5	
Continuous Drain Current @ T _A =70°C, V _{GS} =10V			14.0	
Pulsed Drain Current		I _{DM}	88 *1	
Avalanche Current		I _{AS}	17.5	mJ
Avalanche Energy @ L=1mH, I _D =17.5A, R _G =25Ω		E _{AS}	153 *2	
Repetitive Avalanche Energy @ L=0.05mH		E _{AR}	1.6 *3	
Total Power Dissipation	T _C =25 °C	P _D	5.0	W
	T _C =100 °C		2.0	
	T _A =25 °C	P _{DSM}	3.1	
	T _A =70 °C		2.0	
Operating Junction and Storage Temperature		T _j , T _{stg}	-55~+150	°C

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

*2. 100% tested by conditions of L=0.5mH, I_{AS}=13A, V_{GS}=10V, V_{DD}=15V

*3. Duty cycle ≤ 1%

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case	R _{th,j-c}	25	°C/W
Thermal Resistance, Junction-to-ambient (Note)	R _{th,j-a}	40	

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

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)}	1.0	-	2.5		V _{DS} = V _{GS} , I _D =250μA
G _{FS}	-	16	-	S	V _{DS} =10V, I _D =10A
I _{GSS}	-	-	±100	nA	V _{GS} =±20V
I _{DSS}	-	-	1	μA	V _{DS} =24V, V _{GS} =0V
	-	-	10		V _{DS} =24V, V _{GS} =0V, T _j =85°C
*R _{DS(ON)}	-	4.2	6.6	mΩ	V _{GS} =10V, I _D =18A
	-	6.0	8.3		V _{GS} =4.5V, I _D =10A
Dynamic					
Q _g (V _{GS} =10V) *1, 2	-	35.1	-	nC	V _{DS} =15V,I _D =16A, V _{GS} =10V
Q _g (V _{GS} =4.5V) *1, 2	-	18.6	-		
Q _{gs} *1, 2	-	4.3	-		
Q _{gd} *1, 2	-	8.9	-		

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Dynamic					
Ciss	-	1438	-	pF	V _{DS} =15V, V _{GS} =0V, f=1MHz
Coss	-	270	-		
Crss	-	191	-		
t _{d(ON)} *1, 2	-	13.4	-	ns	V _{DS} =15V, I _D =1A, V _{GS} =10V, R _G =2.7Ω
t _r *1, 2	-	20.6	-		
t _{d(OFF)} *1, 2	-	53.8	-		
t _f *1, 2	-	14	-		
R _g	-	3.1	-	Ω	f=1MHz
Source-Drain Diode Ratings and Characteristics					
V _{SD} *1	-	0.84	1.2	V	I _S =18A, V _{GS} =0V
t _{rr}	-	16.6	-	ns	I _F =16A, dI _F /dt=100A/μs
Q _{rr}	-	10.5	-	nC	

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

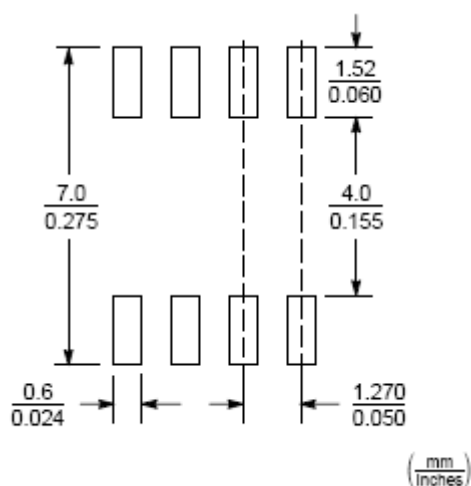
*2.Independent of operating temperature

*3.Pulse width limited by maximum junction temperature.

Ordering Information

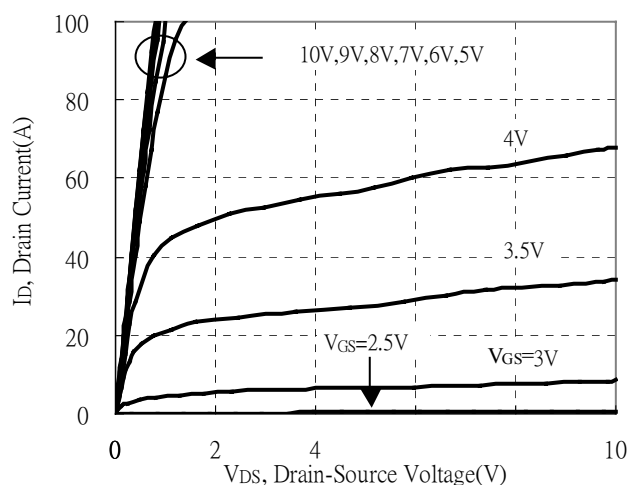
Device	Package	Shipping
KSCB4D0N03B	SOP-8 (RoHS compliant & Halogen-free package)	2500 pcs / Tape & Reel

Recommended Soldering Footprint

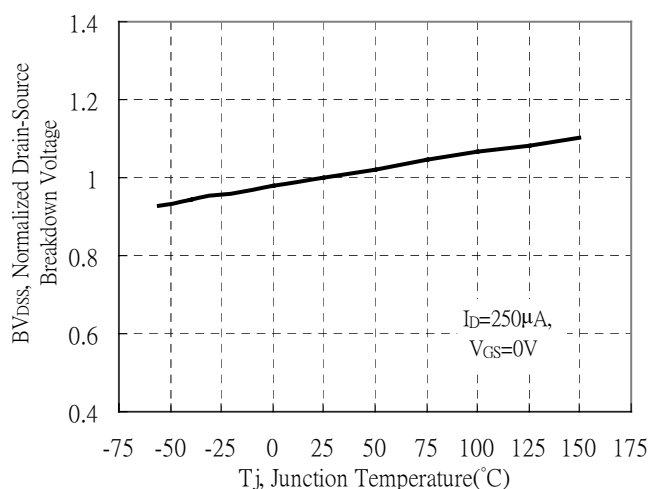


Typical Characteristics

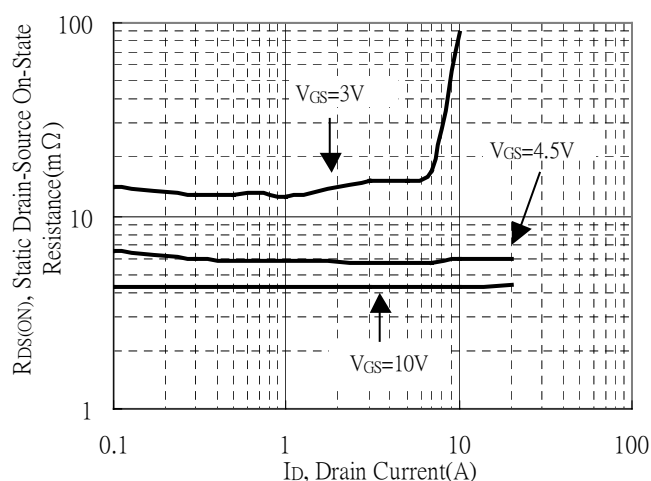
Typical Output Characteristics



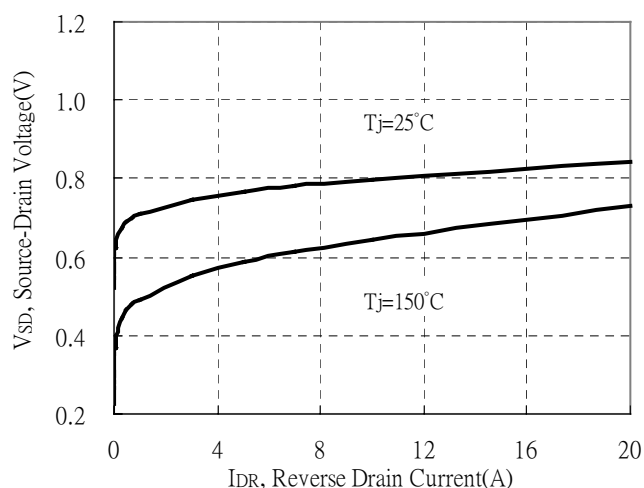
Breakdown Voltage vs Ambient Temperature



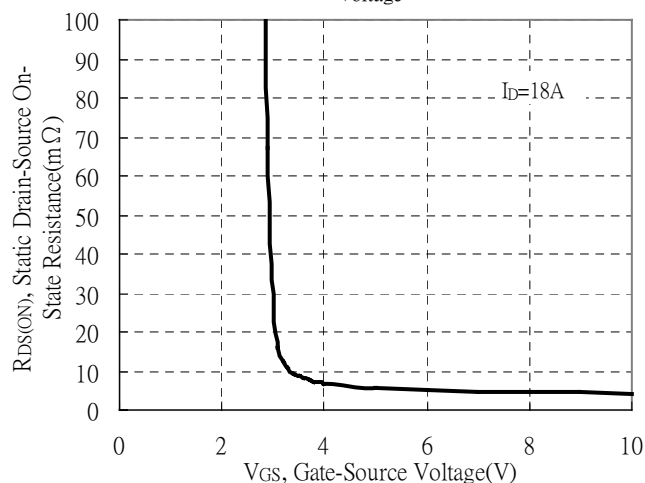
Static Drain-Source On-State resistance vs Drain Current



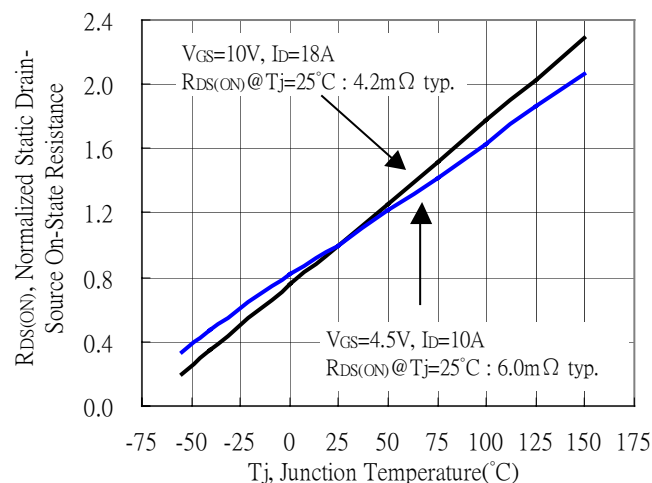
Reverse Drain Current vs Source-Drain Voltage



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

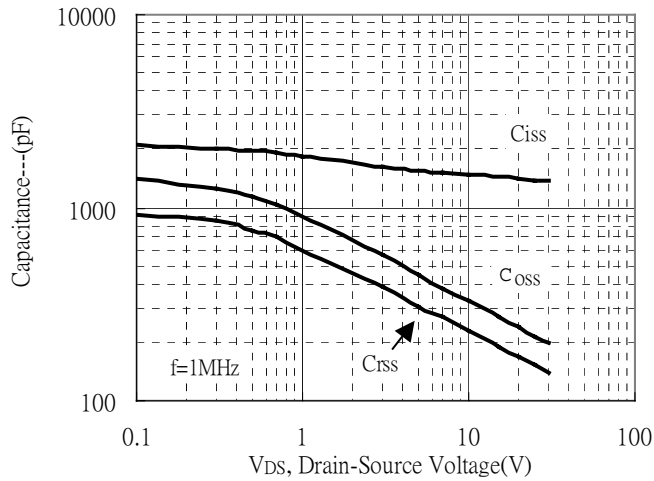


Drain-Source On-State Resistance vs Junction Temperature

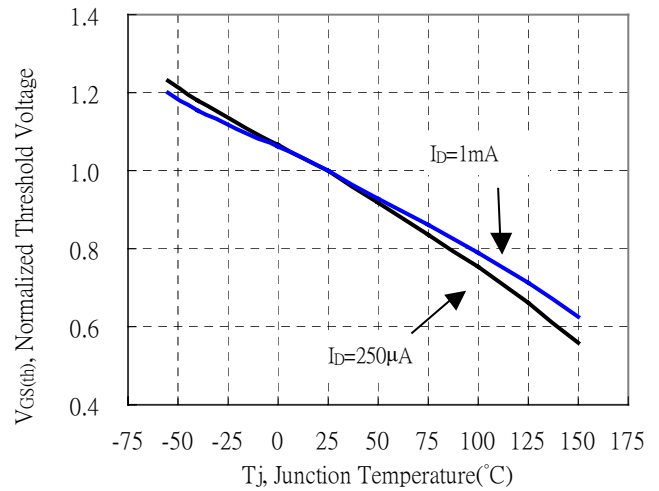


Typical Characteristics(Cont.)

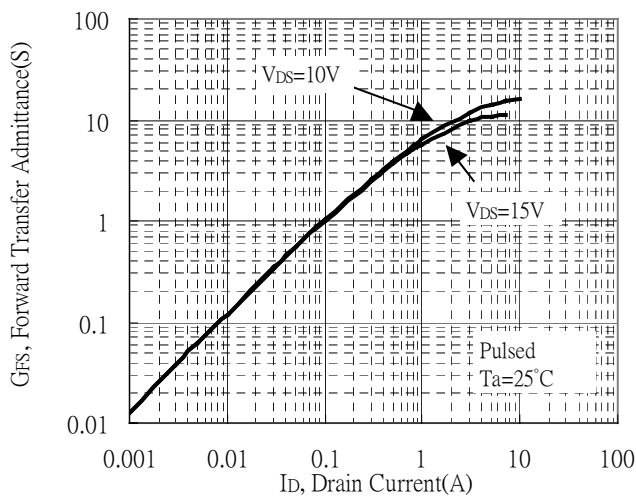
Capacitance vs Drain-to-Source Voltage



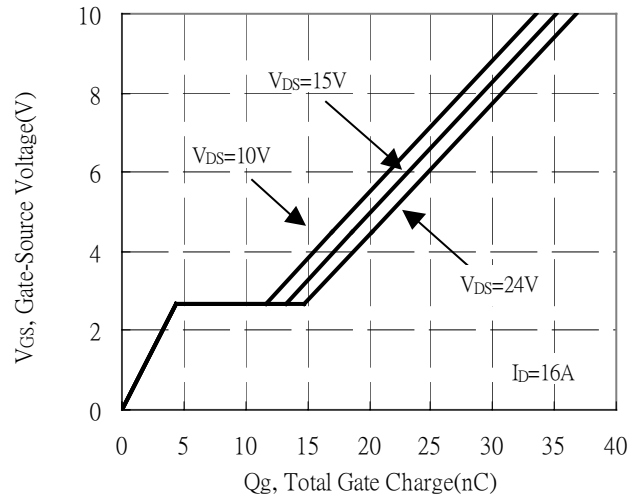
Threshold Voltage vs Junction Temperature



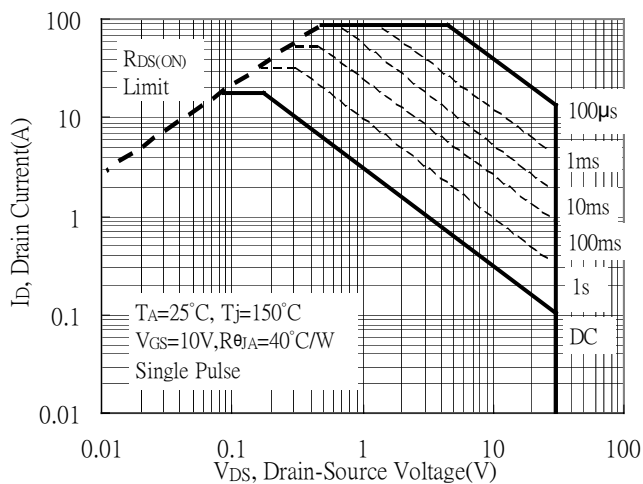
Forward Transfer Admittance vs Drain Current



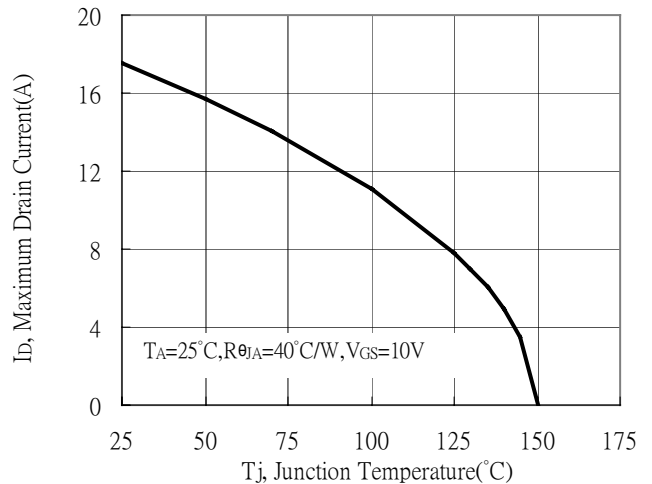
Gate Charge Characteristics



Maximum Safe Operating Area

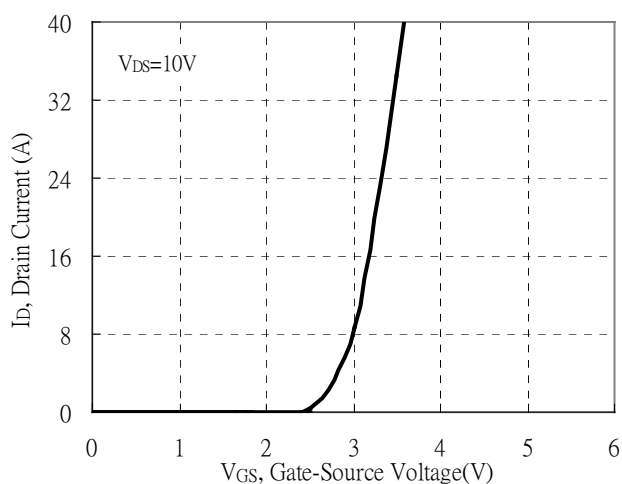


Maximum Drain Current vs Junction Temperature

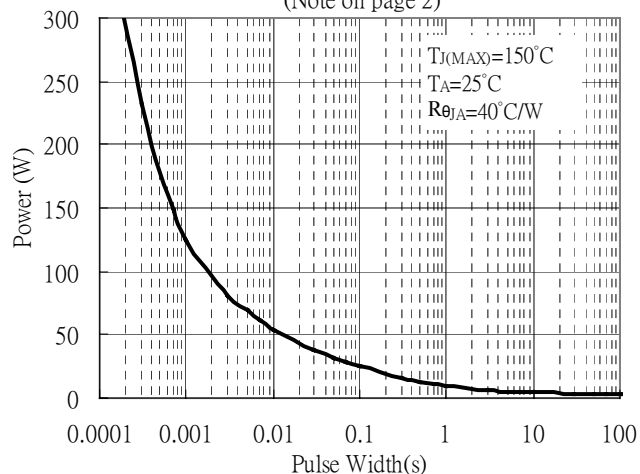


Typical Characteristics(Cont.)

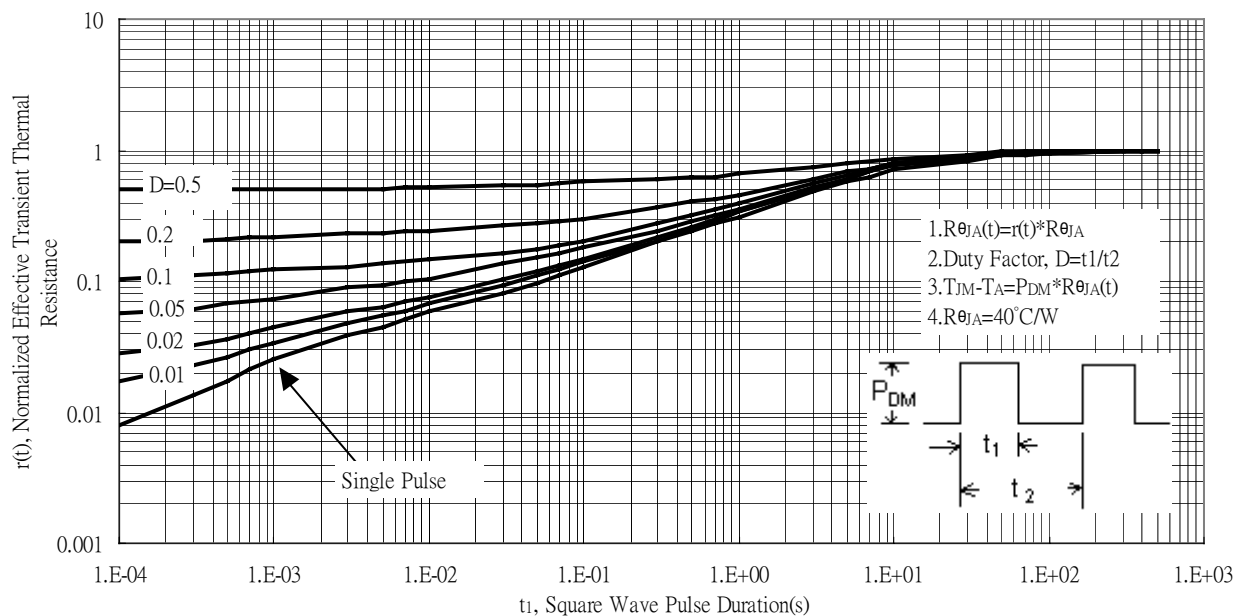
Typical Transfer Characteristics



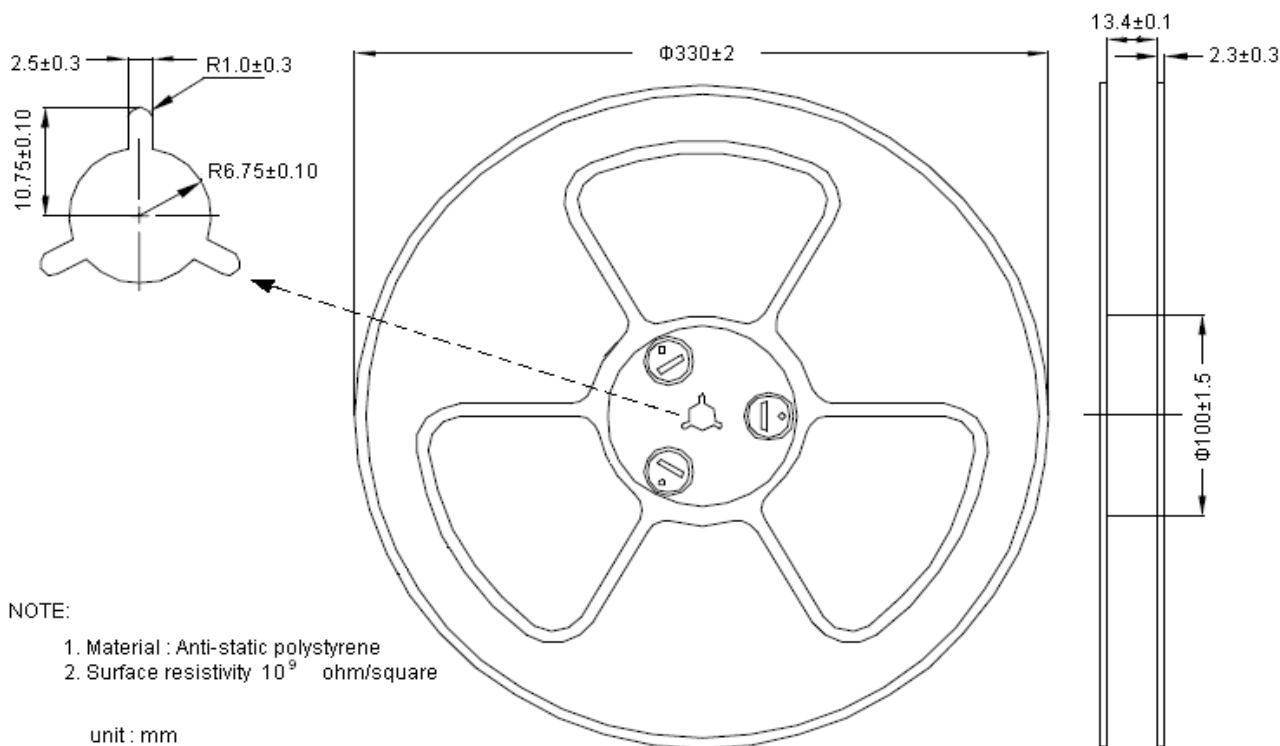
Single Pulse Power Rating, Junction to Ambient
 (Note on page 2)



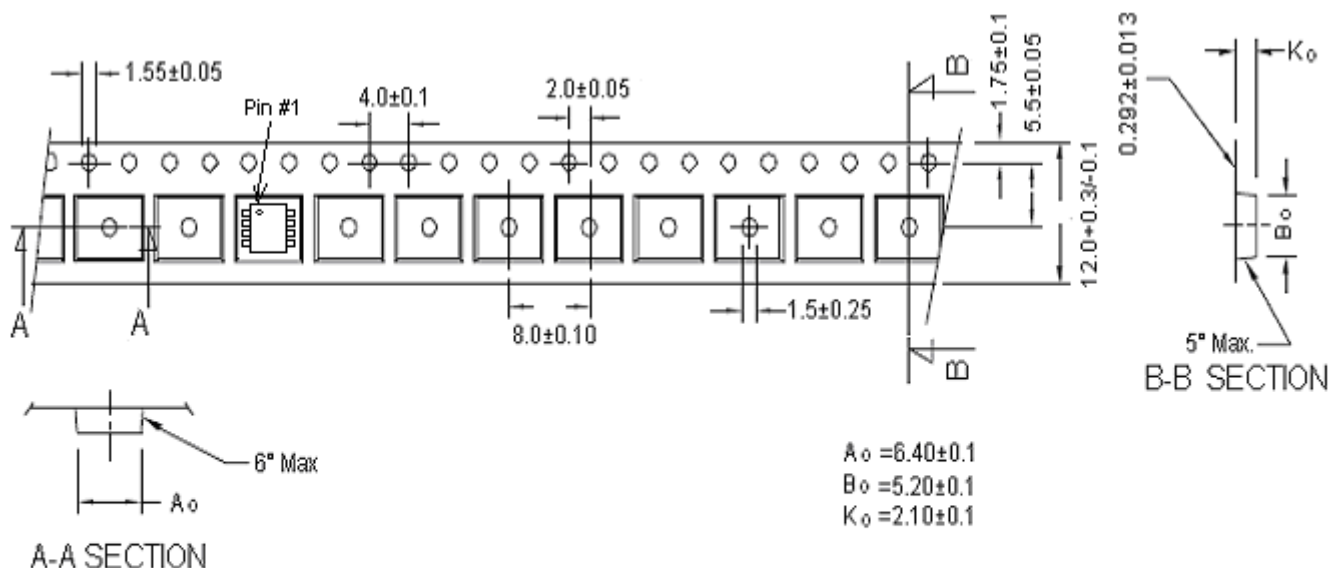
Transient Thermal Response Curves



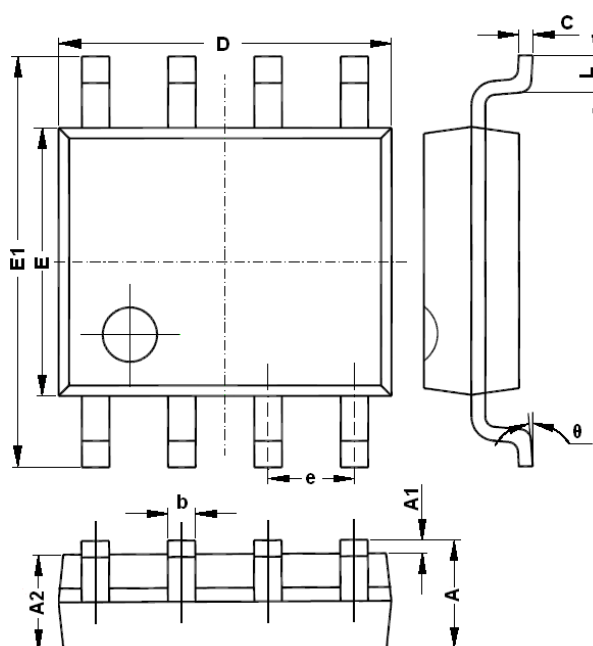
Reel Dimension



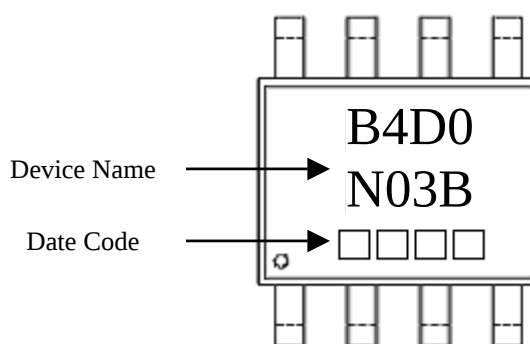
Carrier Tape Dimension



SOP-8 Dimension



Marking:



8-Lead SOP-8 Plastic Package

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 (BSC)		0.050 (BSC)	
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					