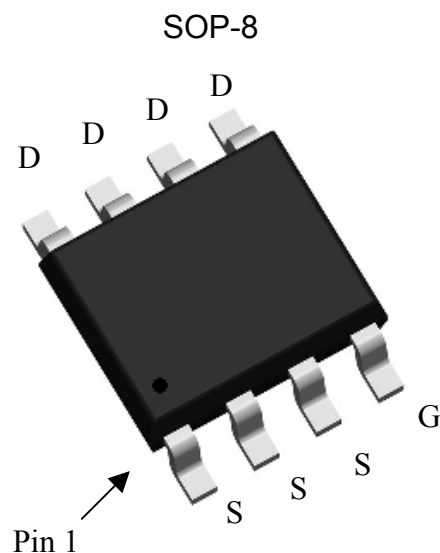


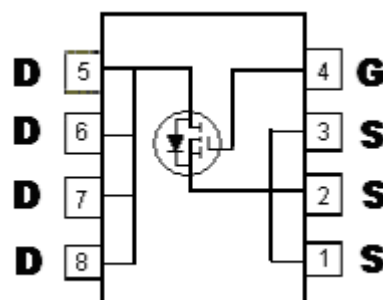
P-Channel Enhancement Mode MOSFET

Features:

- Simple drive requirement
- Low on-resistance
- Fast switching speed
- Pb-free lead plating and halogen-free package



BVDSS	-40V
I_{AS} @ $V_{GS} = -10V$, $T_A = 25^\circ C$	-6.8A
I_{DS} @ $V_{GS} = -10V$, $T_A = 70^\circ C$	-5.4A
$R_{DS(on)}$ @ $V_{GS} = -10V$, $I_{DS} = -6A$	31m Ω (typ)
$R_{DS(on)}$ @ $V_{GS} = -4.5V$, $I_{DS} = -5A$	41m Ω (typ)



G : Gate
S : Source
D : Drain

Ordering Information

Device	Package	Shipping
KWB040P04Q8	SOP-8 (Pb-free lead plating and halogen-free package)	2500 pcs/ Tape & Reel

Absolute Maximum Ratings (Ta=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Breakdown Voltage	BV _{DSS}	-40	V
Gate-Source Voltage	V _{GS}	±20	
Continuous Drain Current @ V _{GS} =-10V, T _A =25°C (Note 1)	I _D	-6.8	A
Continuous Drain Current @ V _{GS} =-10V, T _A =70°C (Note 1)		-5.4	
Pulsed Drain Current (Note 2)	I _{DM}	-38	
Avalanche Current @ L=0.1mH	I _{AS}	-28	
Avalanche Energy @ L=2mH, I _D =-12A, V _{DD} =-15V (Note 3)	E _{AS}	144	mJ
Total Power Dissipation (Note 1)	P _D	T _A =25 °C 3.1	W
		T _A =70 °C 2	
Operating Junction and Storage Temperature	T _j , T _{stg}	-55~+150	°C

Note : 1.Surface mounted on FR-4 board, t≤10sec.

2.Pulse width ≤300μs, Duty Cycle≤2%

3.100% tested by conditions of V_{DD}=-15V, V_{GS}=-10V, L=0.5mH, I_{AS}=-12A

Thermal Data

Parameter	Symbol	Value	Unit
Thermal Resistance, Junction-to-case, max	R _{θJC}	25	°C/W
Thermal Resistance, Junction-to-ambient, max	R _{θJA}	40 (Note)	

Note : Surface mounted on 1 in² copper pad of FR-4 board, pulse width≤10s.

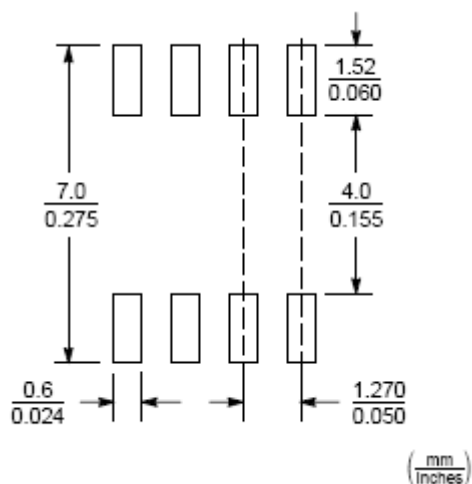
Electrical Characteristics (Tj=25°C, unless otherwise specified)

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Static					
BV _{DSS}	-40	-	-	V	V _{GS} =0V, I _D =-250μA
V _{GS(th)}	-1	-	-2.5		V _{DS} =V _{GS} , I _D =-250μA
I _{GSS}	-	-	±100	nA	V _{GS} =±20V, V _{DS} =0V
I _{DSS}	-	-	-1	μA	V _{DS} =-32V, V _{GS} =0V
	-	-	-5		V _{DS} =-32V, V _{GS} =0V, T _j =55°C
*R _{DS(ON)}	-	31	41	mΩ	I _D =-6A, V _{GS} =-10V
	-	41	55		I _D =-5A, V _{GS} =-4.5V
*G _{FS}	-	8.6	-	S	V _{DS} =-10V, I _D =-5A
Dynamic					
C _{iss}	-	914	-	pF	V _{DS} =-30V, V _{GS} =0V, f=1MHz
C _{oss}	-	69	-		
C _{rss}	-	56	-		
*t _{d(ON)}	-	6.8	-	ns	V _{DD} =-20V, I _D =-6A, V _{GS} =-10V, R _G =1 Ω
*t _r	-	20	-		
*t _{d(OFF)}	-	66.6	-		
*t _f	-	32.8	-		

*Qg	-	19.5	-	nC	V _{DS} =-32V, V _{GS} =-10V, I _D =-6A
*Qgs	-	2.8	-		
*Qgd	-	4.1	-		
Source Drain Diode					
*V _{SD}	-	-0.85	-1.2	V	V _{GS} =0V, I _S =-6A
trr	-	9.6	-	ns	I _F =-6A, dI _F /dt=100A/μs
Qrr	-	5	-	nC	

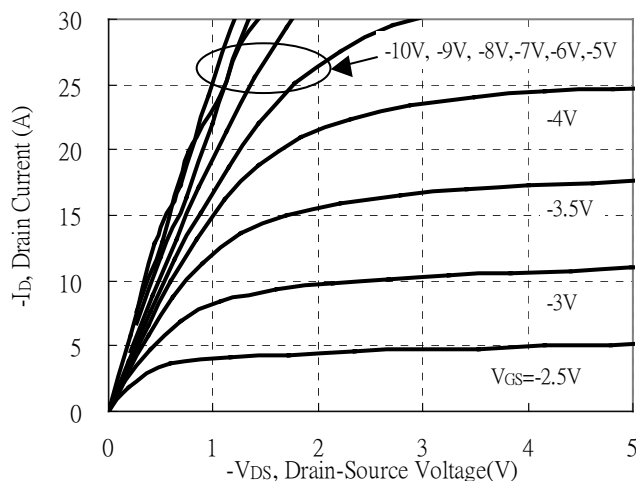
*Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%

Recommended Soldering Footprint

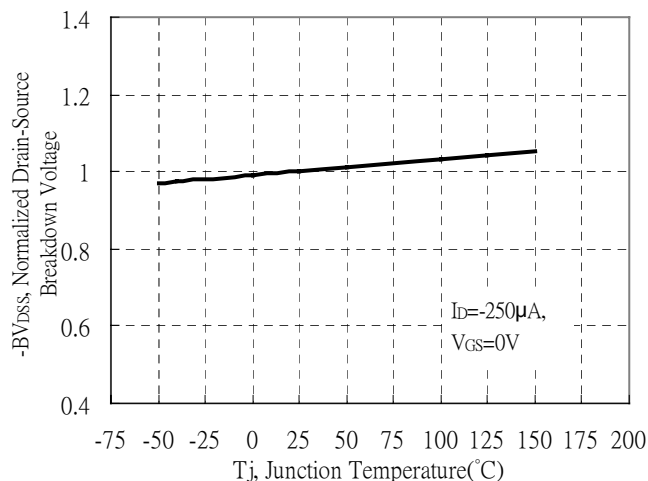


Typical Characteristics

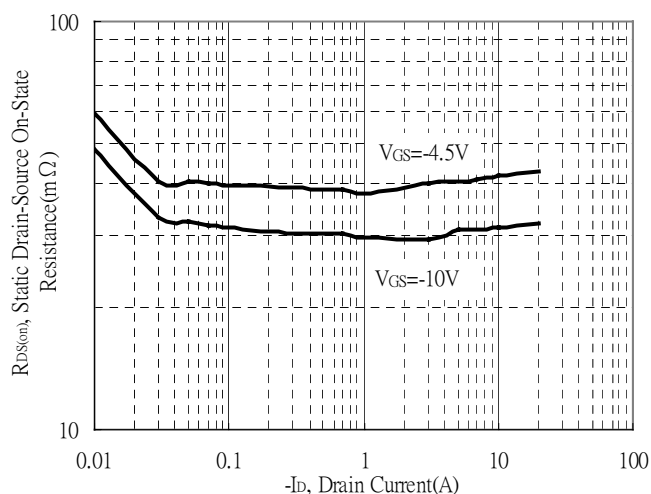
Typical Output Characteristics



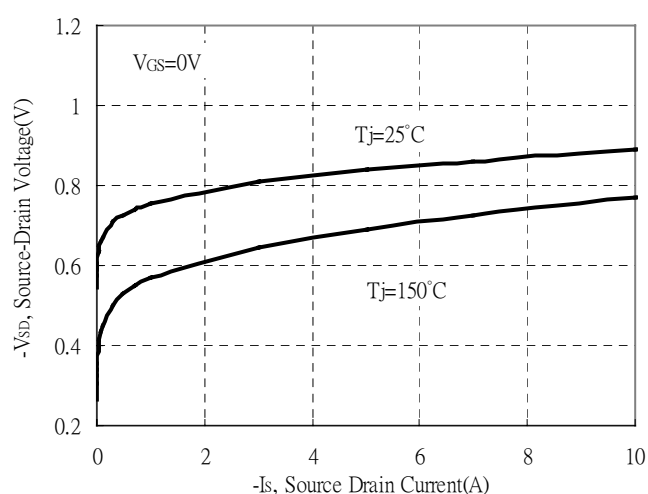
Breakdown Voltage vs Ambient Temperature



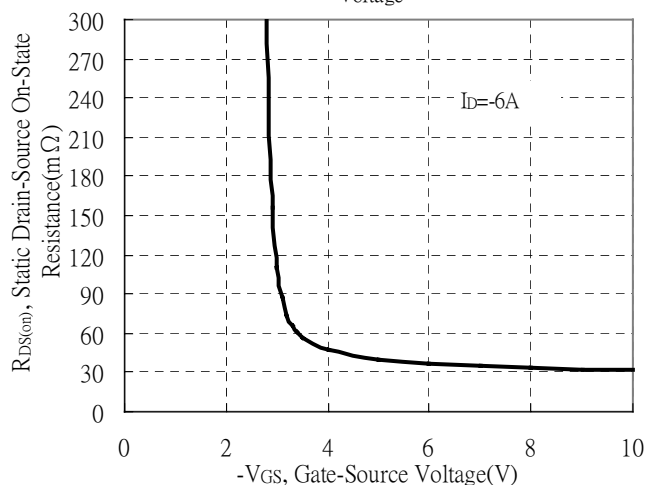
Static Drain-Source On-State resistance vs Drain Current



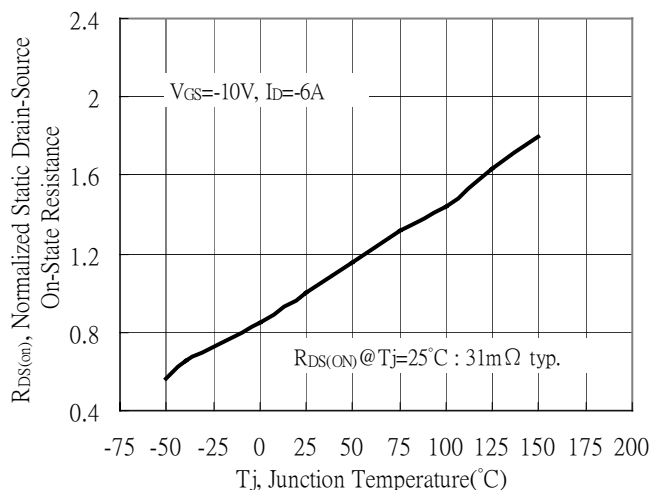
Source Drain Current vs Source-Drain Voltage



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

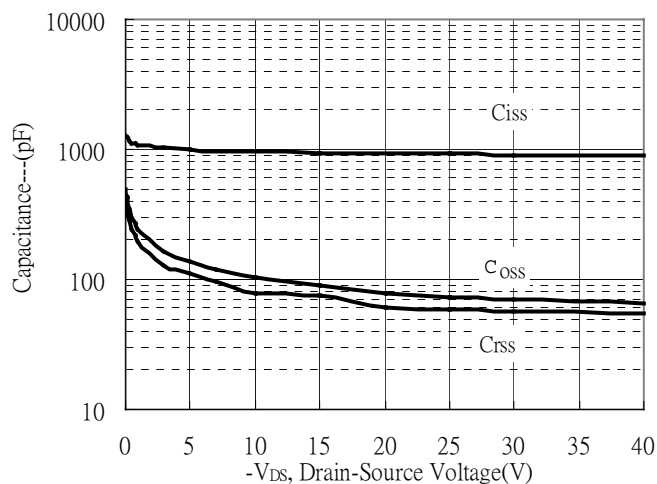


Drain-Source On-State Resistance vs Junction Temperature

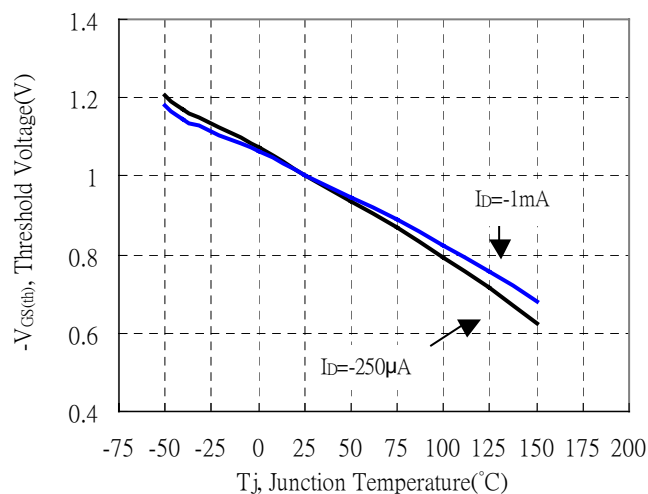


Typical Characteristics(Cont.)

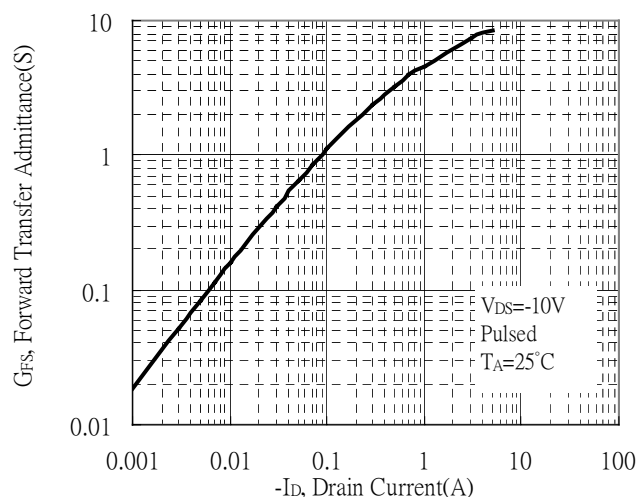
Capacitance vs Drain-to-Source Voltage



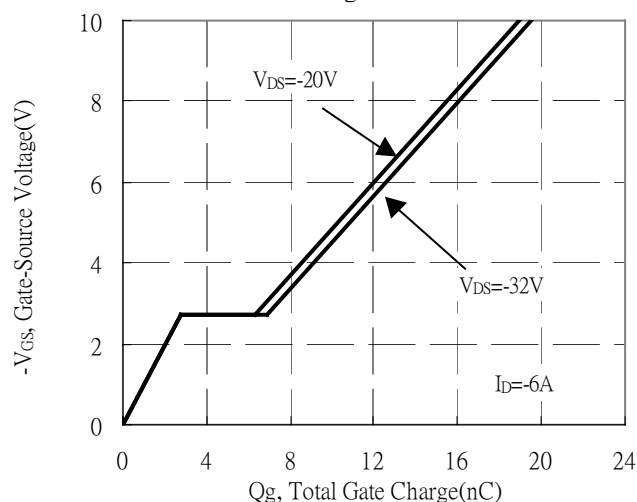
Threshold Voltage vs Junction Temperature



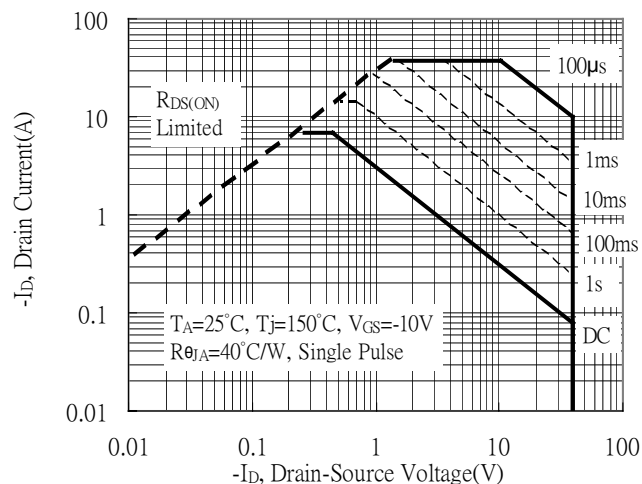
Forward Transfer Admittance vs Drain Current



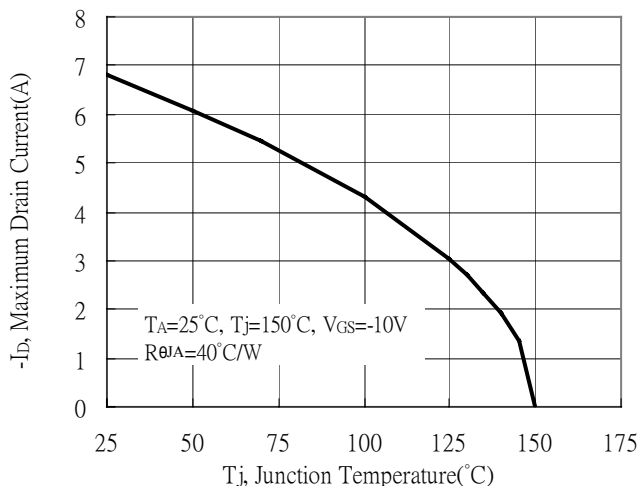
Gate Charge Characteristics



Maximum Safe Operating Area

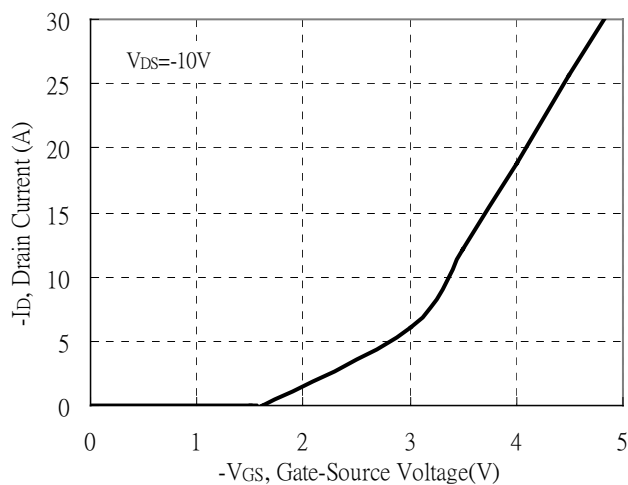


Maximum Drain Current vs Junction Temperature

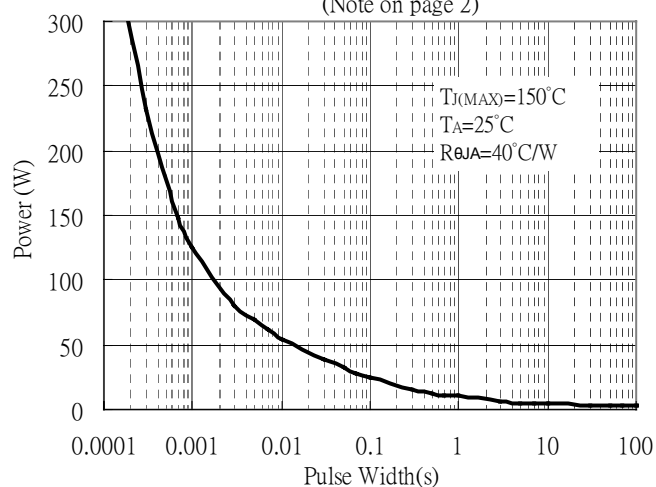


Typical Characteristics(Cont.)

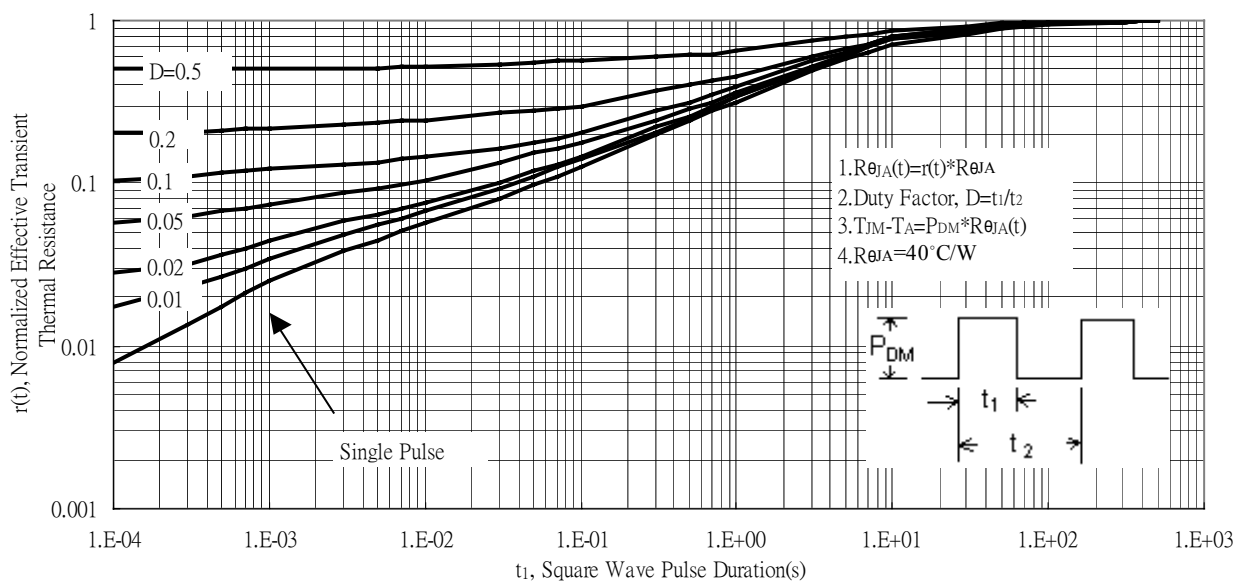
Typical Transfer Characteristics



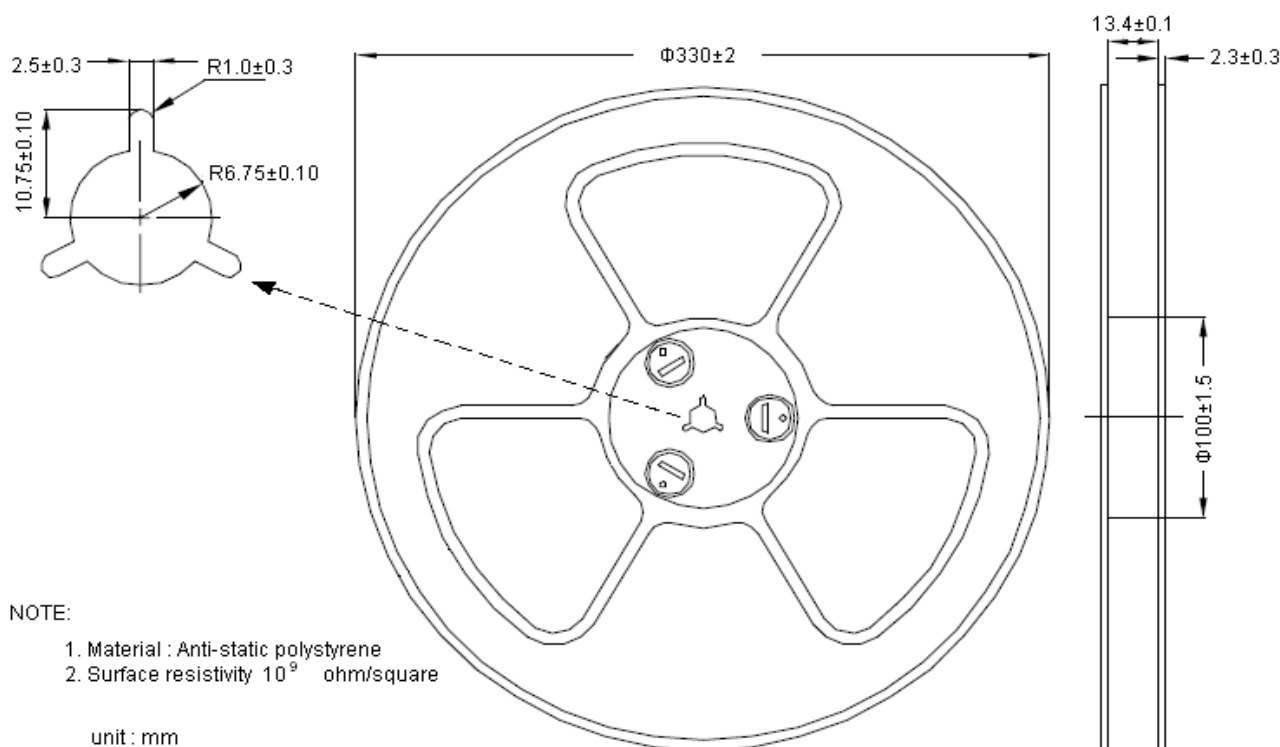
Single Pulse Power Rating, Junction to Ambient
 (Note on page 2)



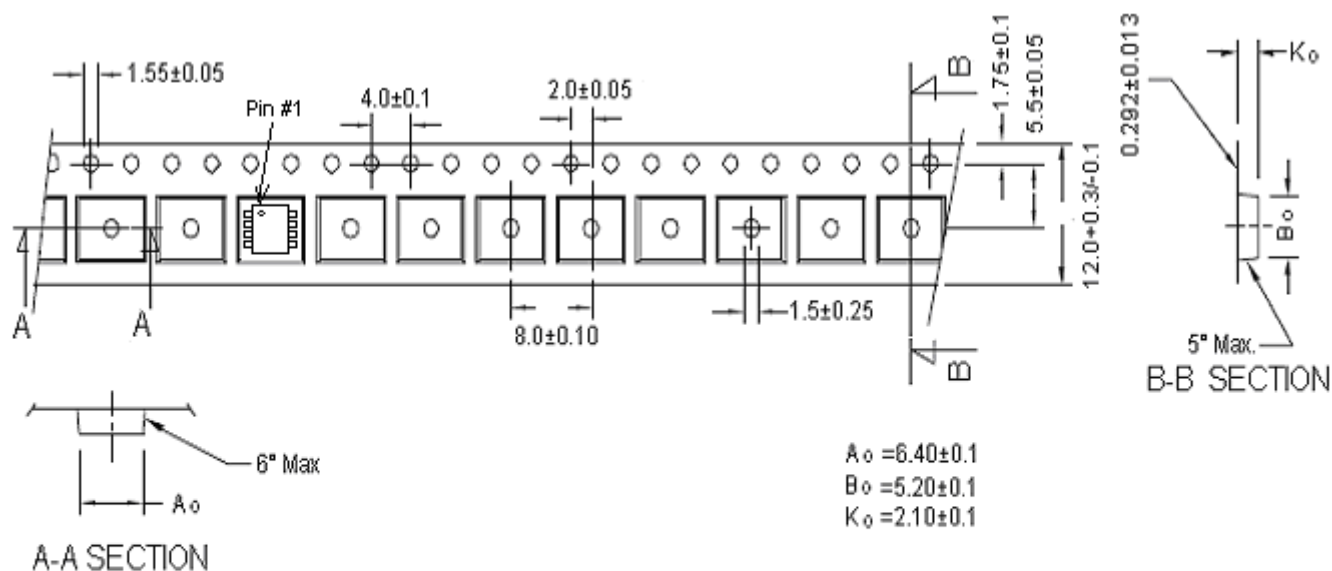
Transient Thermal Response Curves



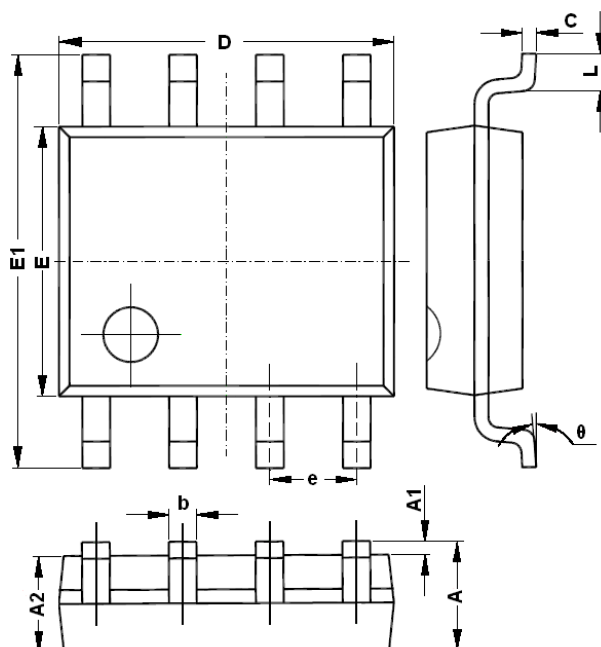
Reel Dimension



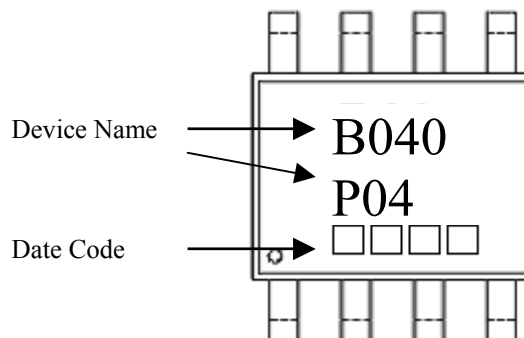
Carrier Tape Dimension



SOP-8 Dimension



Marking:



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 : prodction serial number, 01~99

8-Lead SOP-8 Plastic Package

Package Code: Q8

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					