

P-Channel Enhancement Mode Power MOSFET

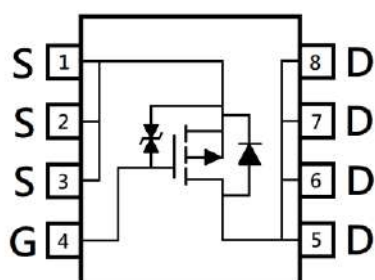
Features:

- Low On Resistance
- Low Gate Charge
- Fast Switching Characteristic
- ESD protected gate

BV_{DSS}	-30V
$I_D @ V_{GS} = -10V, T_C = 25^\circ C$	-19A
$I_D @ V_{GS} = -10V, T_A = 25^\circ C$	-7A
$R_{DS(ON)} \text{ typ. } @ V_{GS} = -10V, I_D = -7A$	18m Ω
$R_{DS(ON)} \text{ typ. } @ V_{GS} = -4.5V, I_D = -5A$	28m Ω

Equivalent Circuit

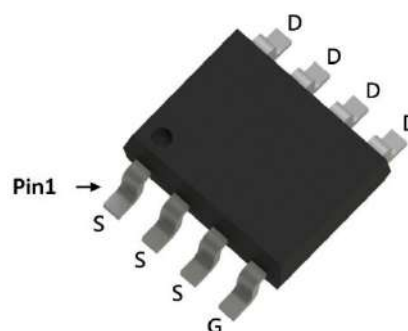
KSCB020P03K



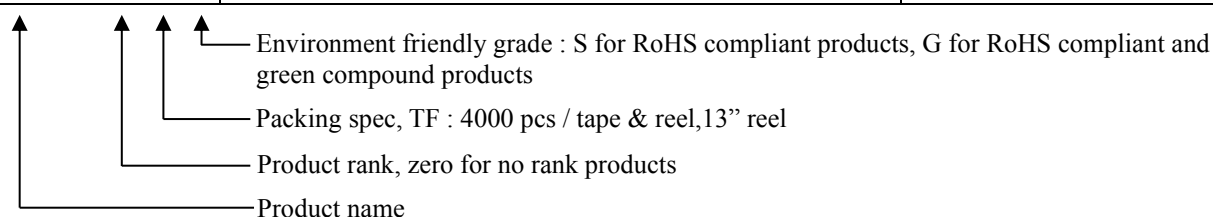
G : Gate S : Source D : Drain

Outline

SOP-8



Device	Package	Shipping
KSCB020P03K-0-TF-G	SOP-8 (Pb-free lead plating and halogen-free package)	4000 pcs / Tape & Reel



Absolute Maximum Ratings (T_A=25°C)

Parameter	Symbol	Limits	Unit
Drain-Source Voltage	V _{DS}	-30	V
Gate-Source Voltage	V _{GS}	±20	
Continuous Drain Current @ V _{GS} =-10V, T _C =25°C	I _D	-19	A
Continuous Drain Current @ V _{GS} =-10V, T _C =100°C		-12	
Continuous Drain Current @ V _{GS} =-10V, T _A =25°C		-7	
Continuous Drain Current @ V _{GS} =-10V, T _A =70°C		-5.6	
Pulsed Drain Current	I _{DM}	-76	
Continuous Body Diode Forward Current @ T _C =25°C	I _S	-12	
Pulsed Body Diode Forward Current @ T _C =25°C	I _{SM}	-48	
Avalanche Current @ L=0.1mH	I _{AS}	-15	mJ
Avalanche Energy @ L=0.5mH	E _{AS}	25	
Total Power Dissipation	T _C =25°C	15	W
	T _C =100°C	6	
	T _A =25°C	2.1	
	T _A =70°C	1.3	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	-55~+150	°C

Thermal Data

Parameter	Symbol	Steady State	Unit
Thermal Resistance, Junction-to-case	R _{θJC}	8.5	°C/W
Thermal Resistance, Junction-to-ambient	R _{θJA}	60	

Note:

- *a. The power dissipation P_D is based on T_{J(MAX)}=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.
- *b. The value of R_{θJA} is measured with the device mounted on 1 in² FR-4 board with 2 oz. copper, in a still air environment with T_A=25°C. The power dissipation P_D is based on R_{θJA} and the maximum allowed junction temperature of 150°C. The value in any given application depends on the user's specific board design.
- *c. Repetitive rating, pulse width limited by junction temperature T_{J(MAX)}=150°C. Ratings are based on low frequency and low duty cycles to keep initial T_J=25°C.

Electrical Characteristics (T_A=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}	-	12	-	S	V _{DS} =-10V, I _D =-7A
I _{GSS}	-	-	±10	μA	V _{GS} =±16V, V _{DS} =0V
I _{DSS}	-	-	-1		V _{DS} =-24V, V _{GS} =0V
R _{DS(ON)}	-	18	24	mΩ	V _{GS} =-10V, I _D =-7A
	-	28	40		V _{GS} =-4.5V, I _D =-5A
Dynamic					
C _{iss}	-	1040	-	pF	V _{DS} =-15V, V _{GS} =0V, f=1MHz
C _{oss}	-	210	-		
C _{rss}	-	160	-		
R _g	-	9	-	Ω	f=1MHz
Q _g *1, 2	-	21	-	nC	V _{DS} =-15V, I _D =-6A, V _{GS} =-10V
Q _{gs} *1, 2	-	2.8	-		
Q _{gd} *1, 2	-	4.4	-		
t _{d(ON)} *1, 2	-	7.2	-	ns	V _{DS} =-15V, I _D =-6A, V _{GS} =-10V, R _{GS} =1 Ω
t _r *1, 2	-	17	-		
t _{d(OFF)} *1, 2	-	50	-		
t _f *1, 2	-	12	-		
Source-Drain Diode					
V _{SD} *1	-	-0.85	-1.2	V	I _S =-7A, V _{GS} =0V
t _{rr}	-	9.7	-	ns	I _F =-6A, dI _F /dt=100A/μs
Q _{rr}	-	3.3	-	nC	

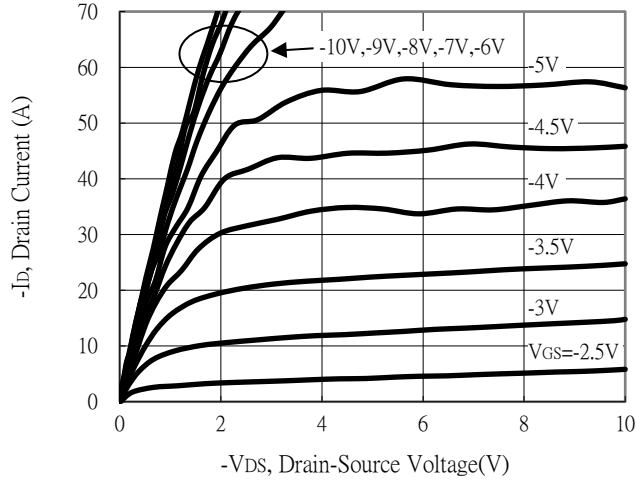
Note:

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

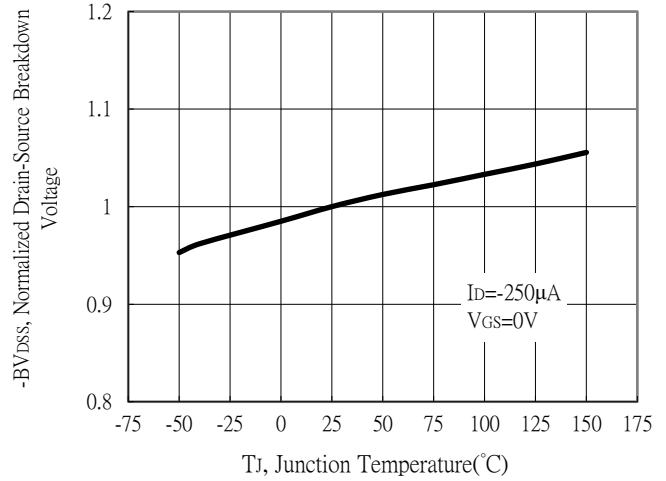
*2. Independent of operating temperature

Typical Characteristics

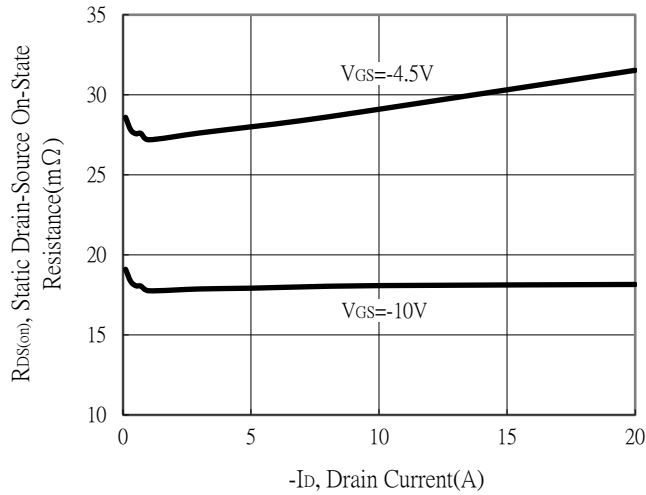
Typical Output Characteristics



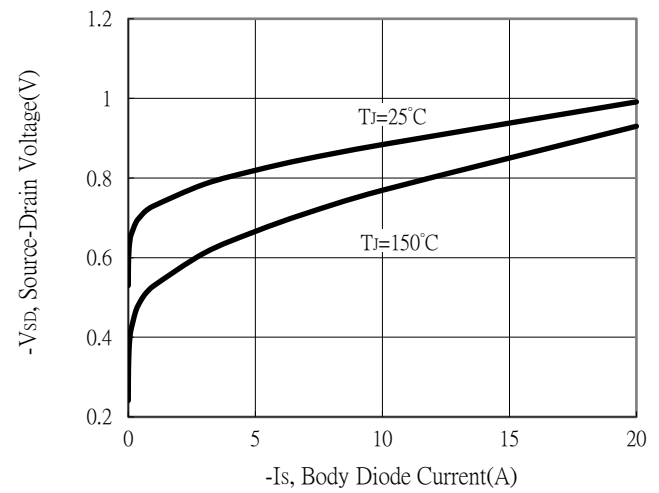
Breakdown Voltage vs Ambient Temperature



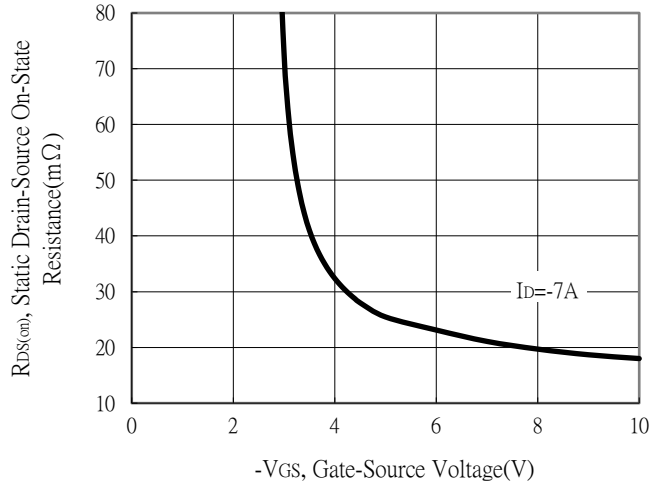
Static Drain-Source On-State resistance vs Drain Current



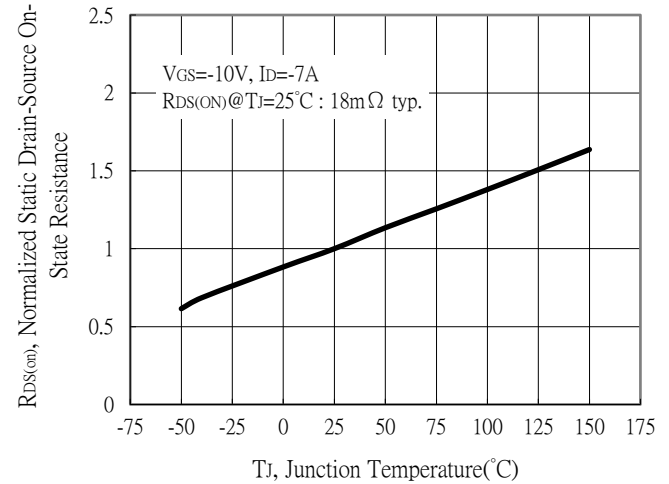
Body Diode Current vs Source-Drain Voltage



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

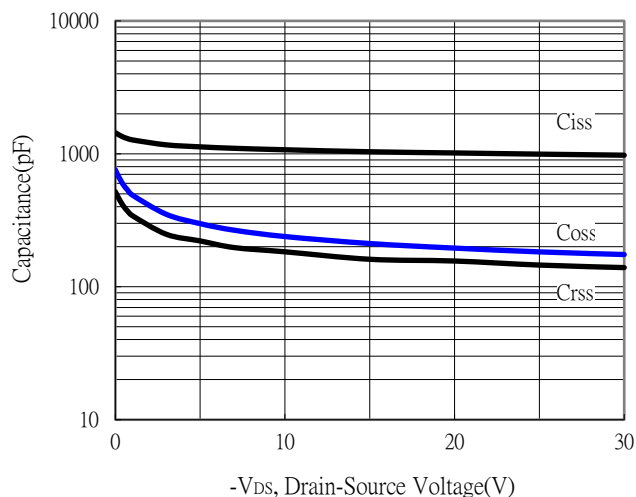


Drain-Source On-State Resistance vs Junction Temperature

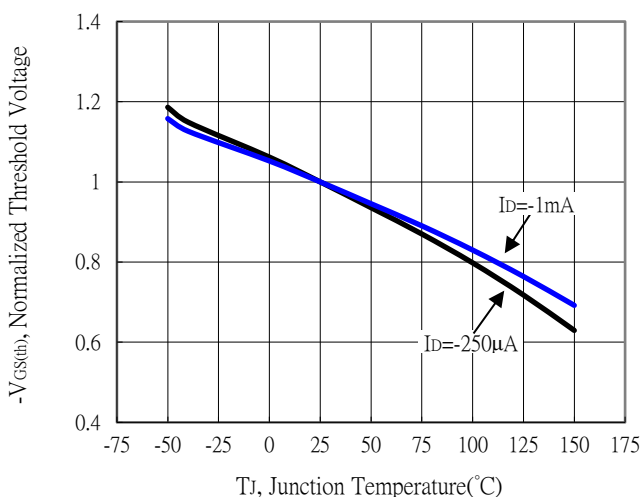


Typical Characteristics (Cont.)

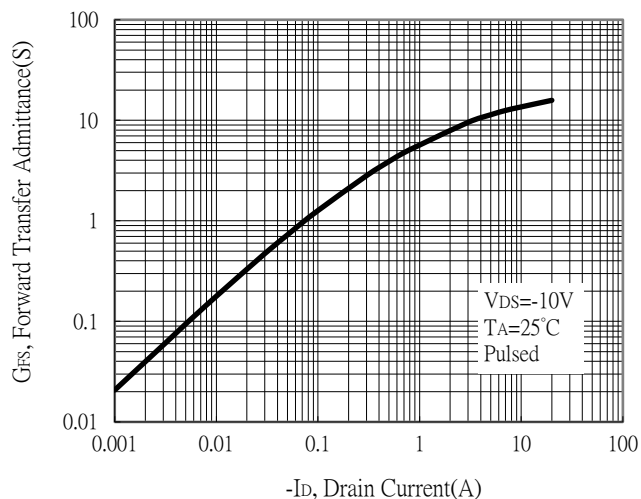
Capacitance vs Drain-to-Source Voltage



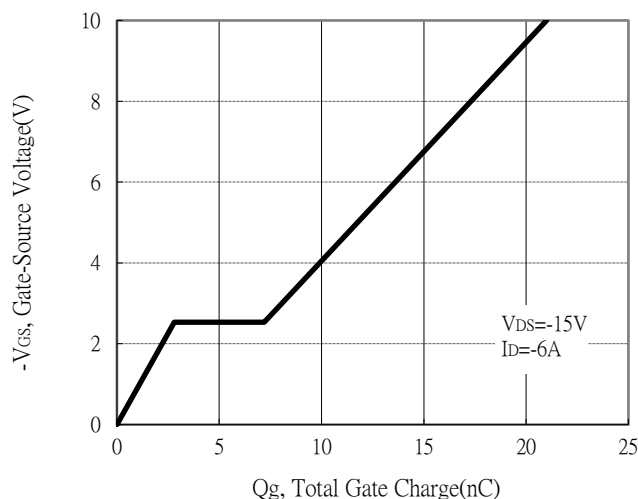
Threshold Voltage vs Junction Temperature



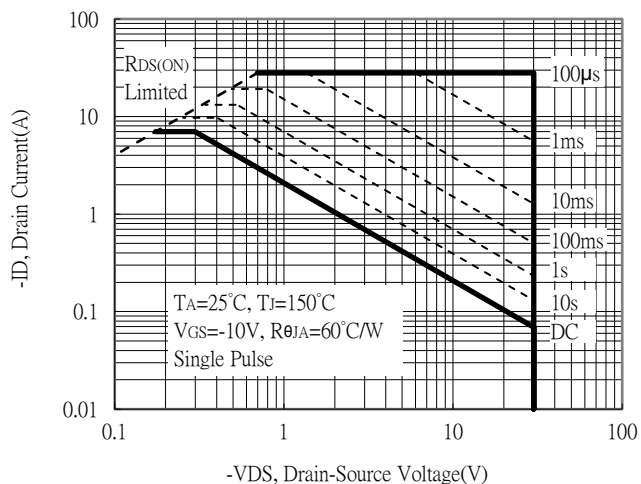
Forward Transfer Admittance vs Drain Current



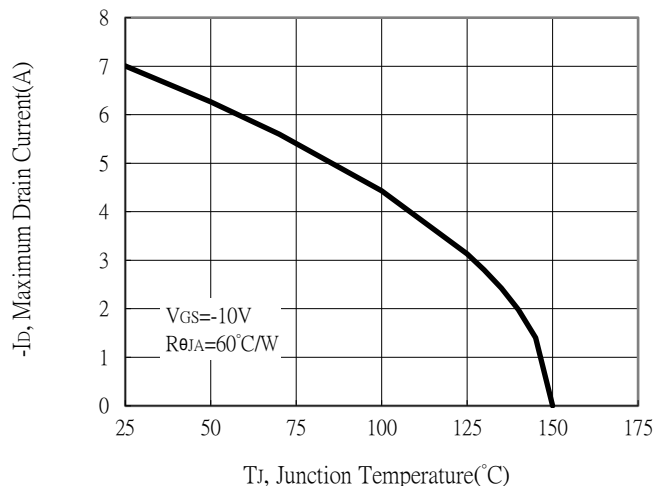
Gate Charge Characteristics



Maximum Safe Operating Area

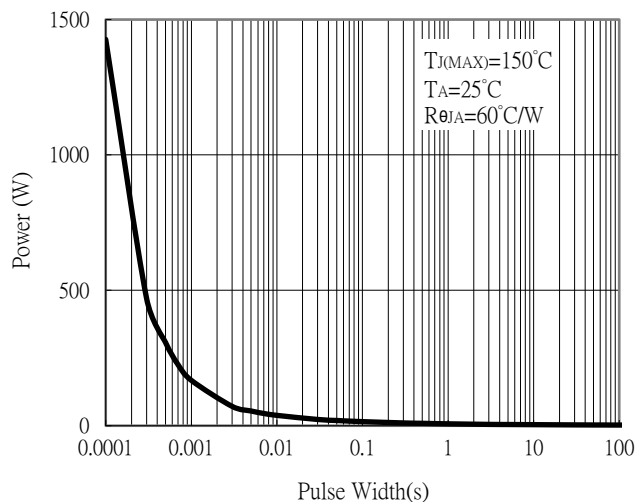


Maximum Drain Current vs Junction Temperature

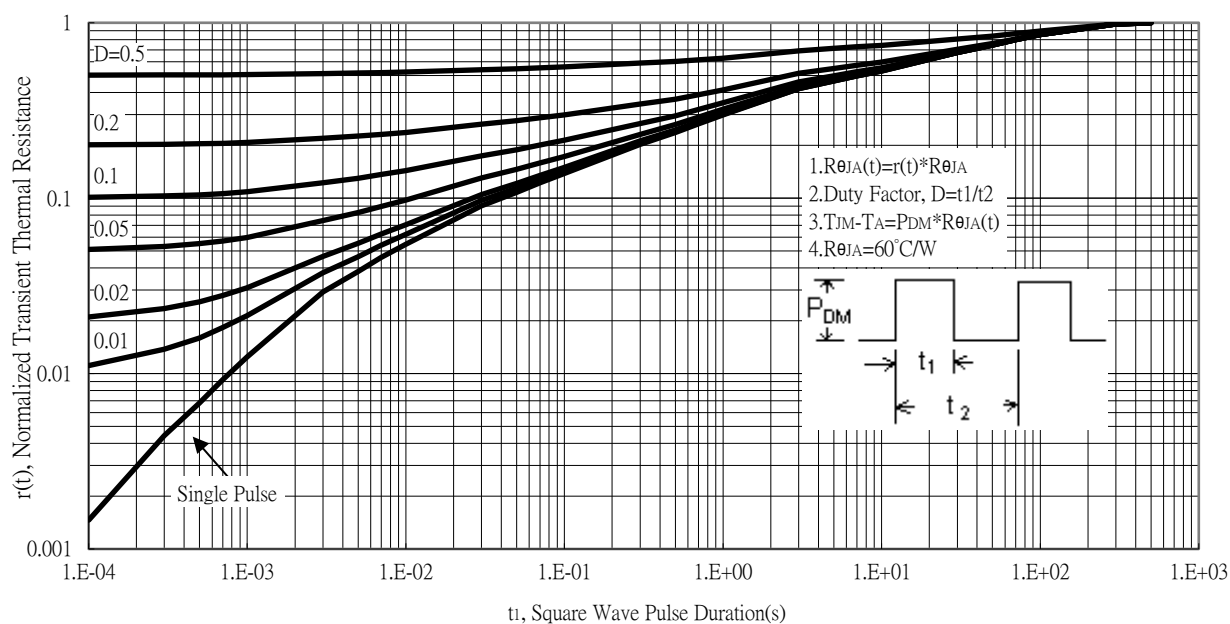


Typical Characteristics (Cont.)

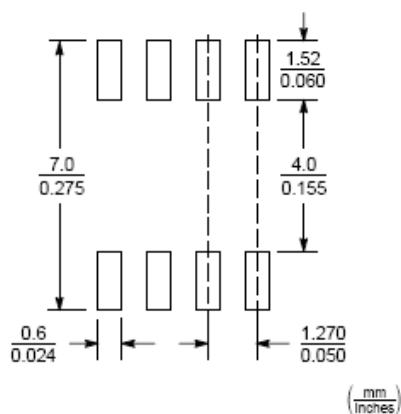
Single Pulse Power Rating, Junction to Ambient



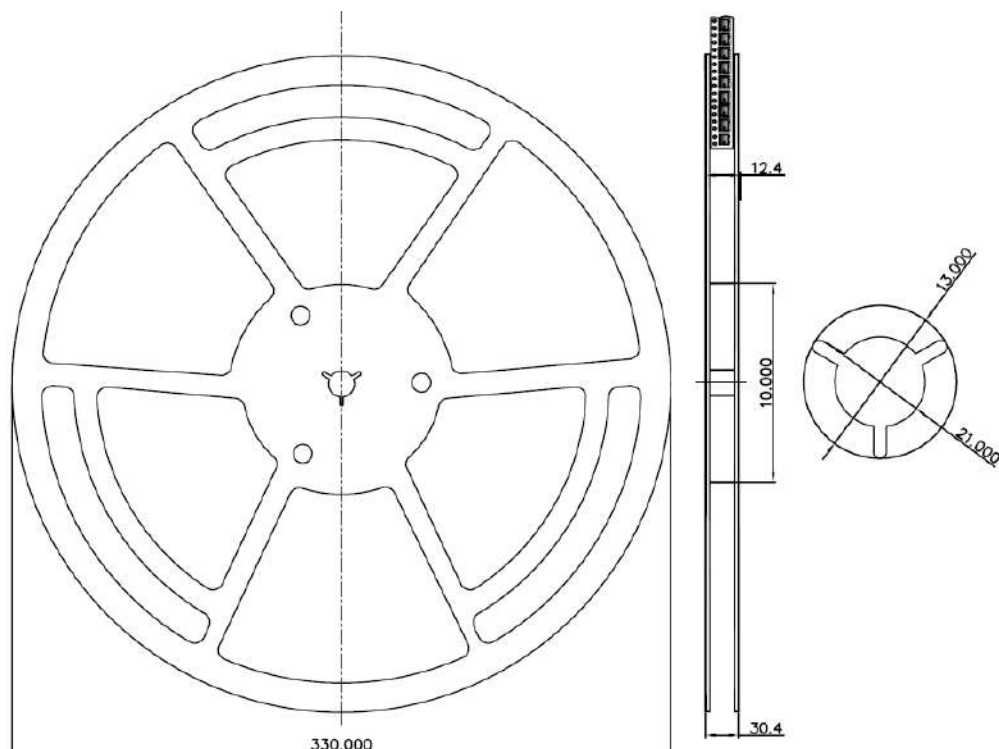
Transient Thermal Response Curves



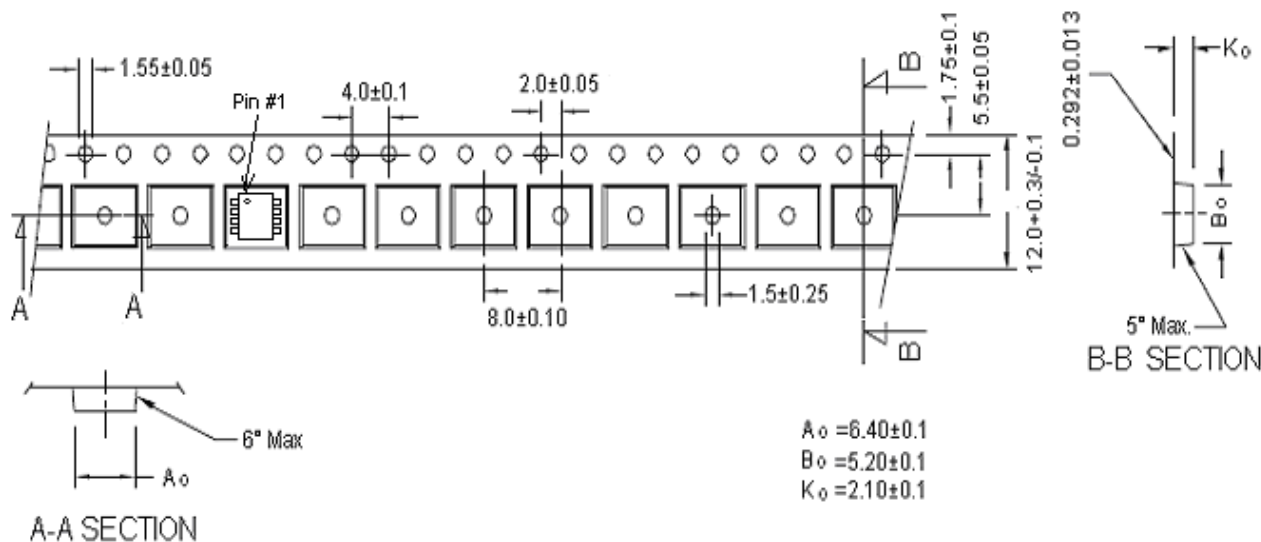
Recommended Soldering Footprint



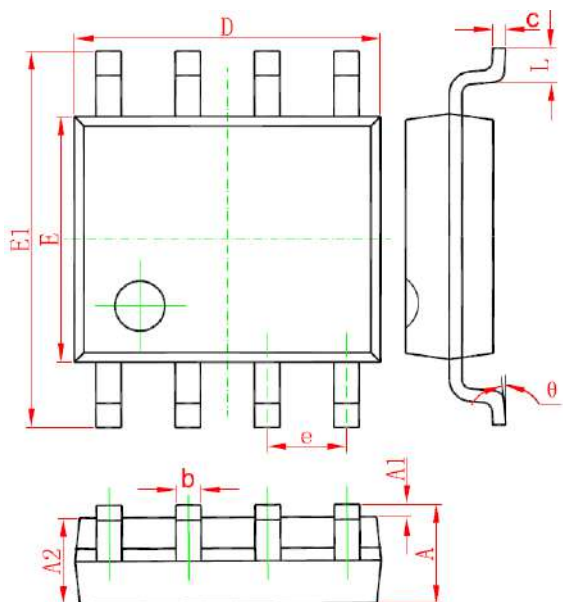
Reel Dimension



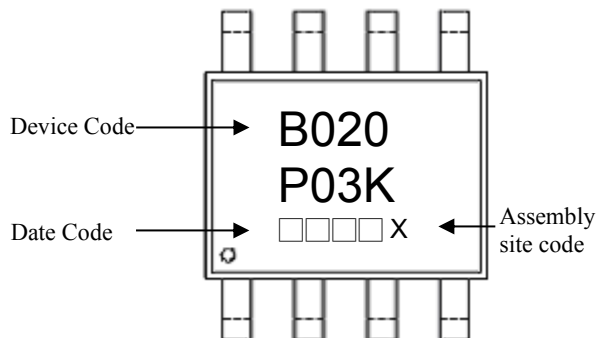
Carrier Tape Dimension



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 : 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					

Notes: 1.Controlling dimension: millimeters.

2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.

3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.