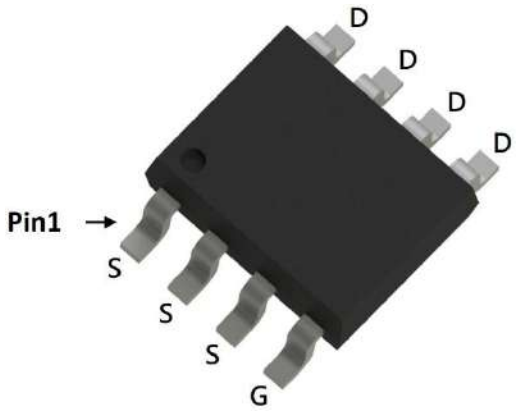
P-Channel Enhancement Mode Power MOSFET

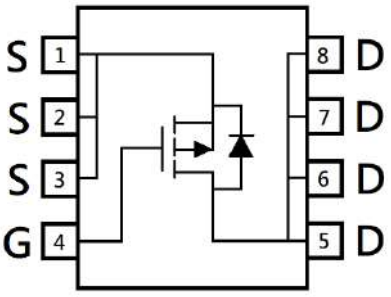
Features:

- Simple drive requirement
- Low on-resistance
- Fast switching speed
- Pb-free and Halogen-free package

SOP-8



BV_{DSS}	-30V
I_D@V_{GS}=-10V, T_C=25°C	-25A
I_D@V_{GS}=-10V, T_A=25°C	-11A
$R_{DS(ON)}$ typ.@V_{GS}=-10V, I_D=-10A	8mΩ
$R_{DS(ON)}$ typ.@V_{GS}=-4.5V, I_D=-8A	12mΩ



G : Gate S : Source D : Drain

Ordering Information

Device	Package	Shipping
KSC4409	SOP-8 (Pb-free lead plating and halogen-free package)	4000 pcs / tape & reel

Absolute Maximum Ratings (Tc=25°C, unless otherwise noted)

Parameter		Symbol	Limits	Unit
Drain-Source Breakdown Voltage		BV_{DSS}	-30	V
Gate-Source Voltage		V_{GS}	±25	
Continuous Drain Current @V_{GS}=-10V, T_A=25 °C		I_D	-15	A
Continuous Drain Current @ V_{GS}=-10V, T_A=100 °C			-9.5	
Pulsed Drain Current (Note 1)		I_{DM}	-160	
Avalanche Current @ L=1mH		I_{AS}	-15	
Avalanche Energy @ L=1mH, I_D=-15A, V_{DD}=-15V		E_{AS}	113 (Note3)	mJ
Power Dissipation (Note 2)	T_A=25 °C	P_D	3.1	W
	T_A=100 °C		1.2	
Operating Junction and Storage Temperature Range		Tj ; Tstg	-55~+150	°C

Note : 1.Pulse width limited by maximum junction temperature.
2.Surface mounted on 1 in² copper pad of FR-4 board, t≤10s.
3.100% tested by conditions of L=0.1mH, I_{AS}=-15A, V_{GS}=-10V, V_{DD}=-15V

Electrical Characteristics (Tc=25°C, unless otherwise noted)

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
I_{GSS}	-	-	±100	nA	V_{GS}=±25V, V_{DS}=0V
I_{DSS}	-	-	-1	μA	V_{DS}=-24V, V_{GS}=0V
	-	-	-10		V_{DS}=-20V, V_{GS}=0V, Tj=125°C
$R_{DS(ON)}$ (Note 1)	-	6.5	9	mΛ	I_D=-15A, V_{GS}=-10V
	-	9.9	15		I_D=-10A, V_{GS}=-4.5V
G_{FS} (Note 1)	-	28	-	S	V_{DS}=-10V, I_D=-15A
Dynamic					
Ciss	-	2782	-	pF	V_{DS}=-15V, V_{GS}=0V, f=1MHz
Coss	-	371	-		
Crss	-	235	-		
$t_{d(ON)}$ (Note 1&2)	-	12.8	-	ns	V_{DS}=-15V, I_D=-15A, V_{GS}=-10V, R_G=3Ω
t_r (Note 1&2)	-	19.8	-		
$t_{d(OFF)}$ (Note 1&2)	-	110.2	-		
t_f (Note 1&2)	-	49.6	-		
Qg(V_{GS}=10V) (Note 1&2)	-	53.8	-	nC	V_{DS}=-15V, I_D=-15A, V_{GS}=-10V
Qg(V_{GS}=4.5V) (Note 1&2)	-	27	-		
Qgs (Note 1&2)	-	9	-		
Qgd (Note 1&2)	-	11	-		
Rg	-	13.5	-	Λ	f=1MHz

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

Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Source-Drain Diode					
I_S	-	-	-10	A	
I_{SM}(Note 3)	-	-	-40		
V_{SD}(Note 1)	-	-0.8	-1.2	V	I_F=I_S, V_{GS}=0V
trr	-	16.6	-	ns	I_F=-10A, dI_F/dt=100A/μs
Qrr	-	8.3	-	nC	

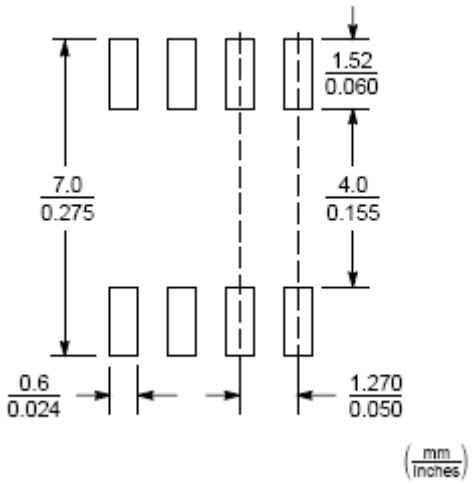
Note : 1.Pulse Test : Pulse Width ≤300μs, Duty Cycle≤2%
2.Independent of operating temperature
3.Pulse width limited by maximum junction temperature

Thermal Resistance Ratings

Thermal Resistance	Symbol	Typical	Maximum	Unit
Junction-to-Case	$R_{\theta JC}$	22	25	℃ / W
Junction-to-Ambient (Note)	$R_{\theta JA}$	33	40	

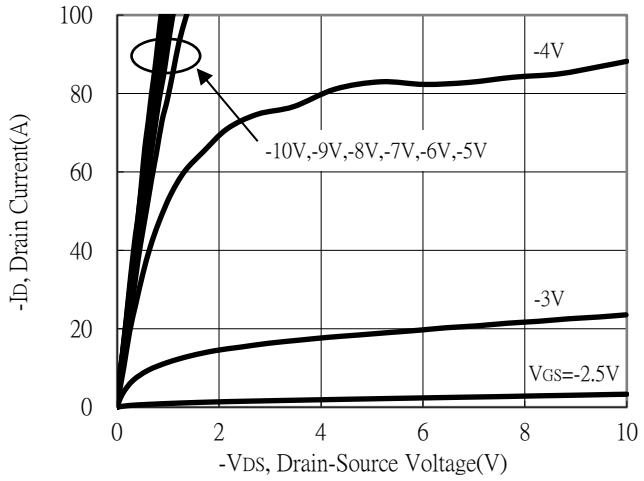
Note : W when mounted on a 1 in^2 pad of 2 oz copper, t≤10s; 125˚C/W when mounted on minimum copper pad.

Recommended Soldering Footprint

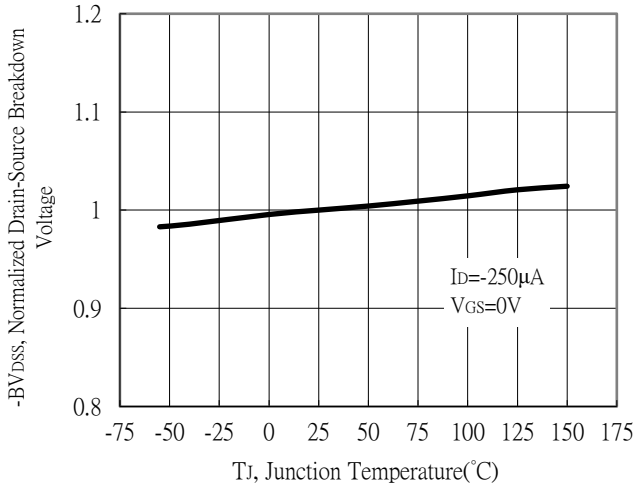


Typical Characteristics

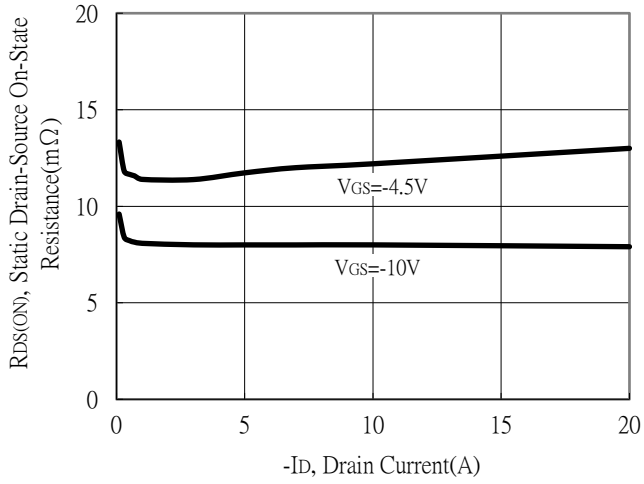
Typical Output Characteristics



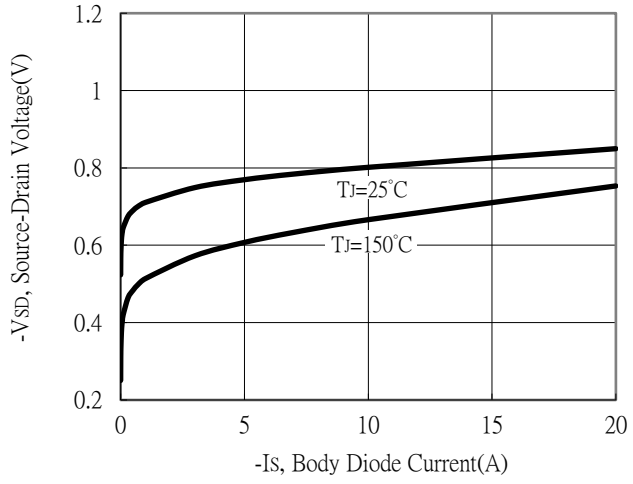
Breakdown Voltage vs Ambient Temperature



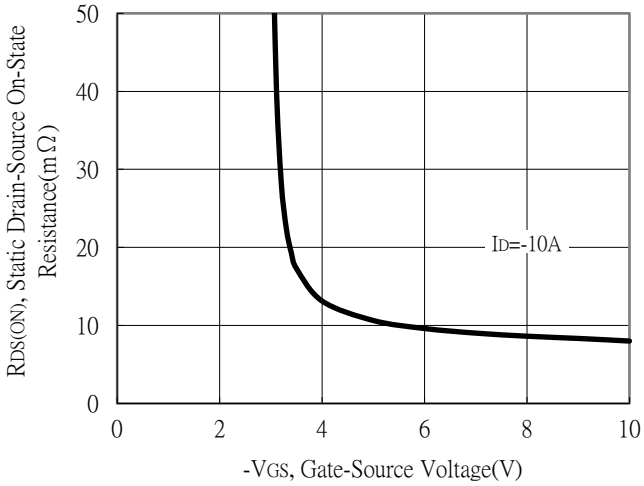
Static Drain-Source On-State resistance vs Drain Current



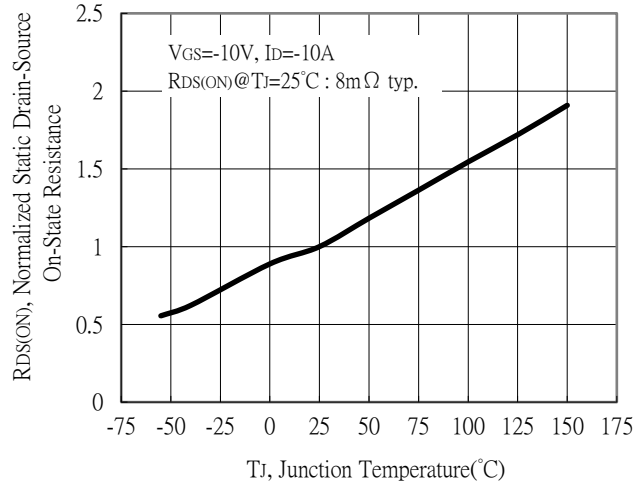
Body Diode Current vs Source-Drain Voltage



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

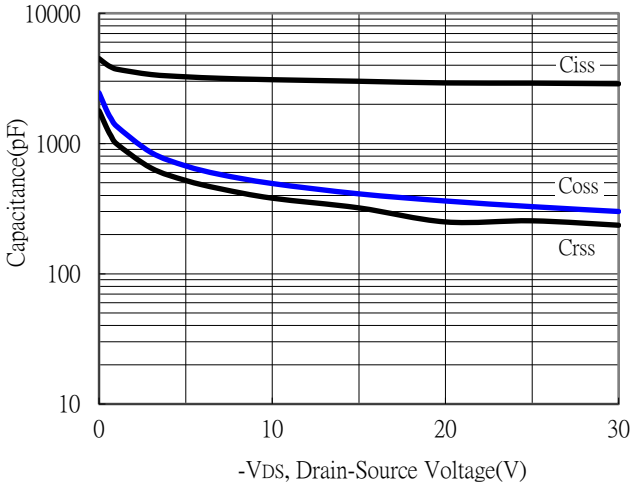


Drain-Source On-State Resistance vs Junction Temperature

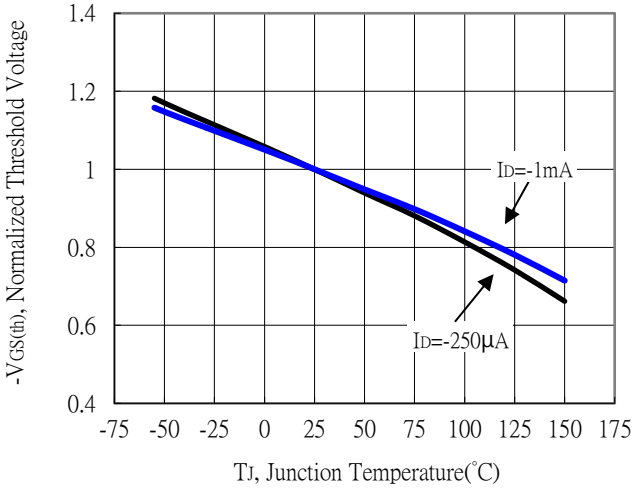


Typical Characteristics (Cont.)

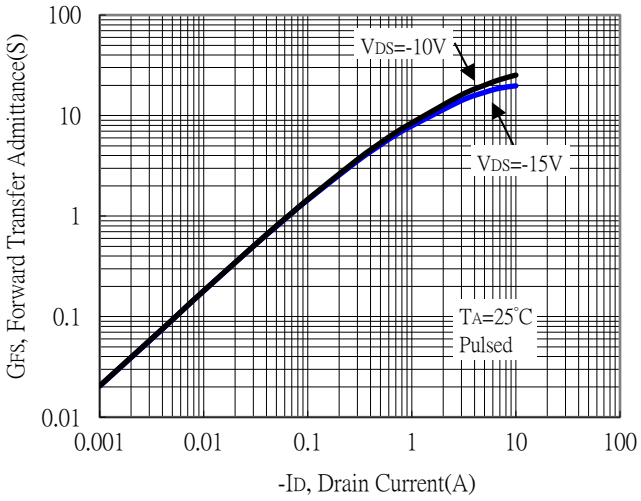
Capacitance vs Drain-to-Source Voltage



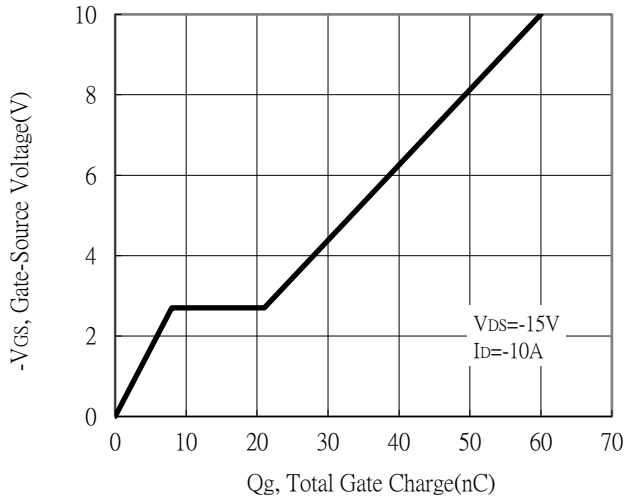
Threshold Voltage vs Junction Temperature



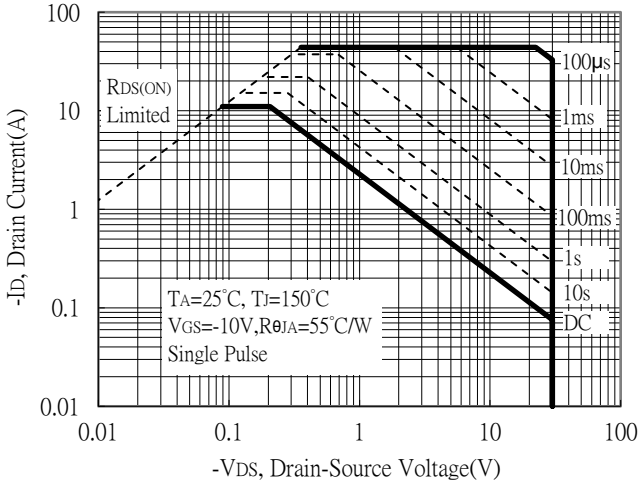
Forward Transfer Admittance vs Drain Current



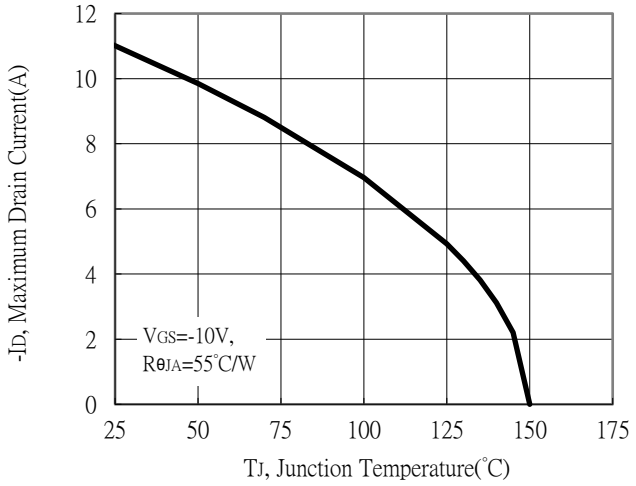
Gate Charge Characteristics



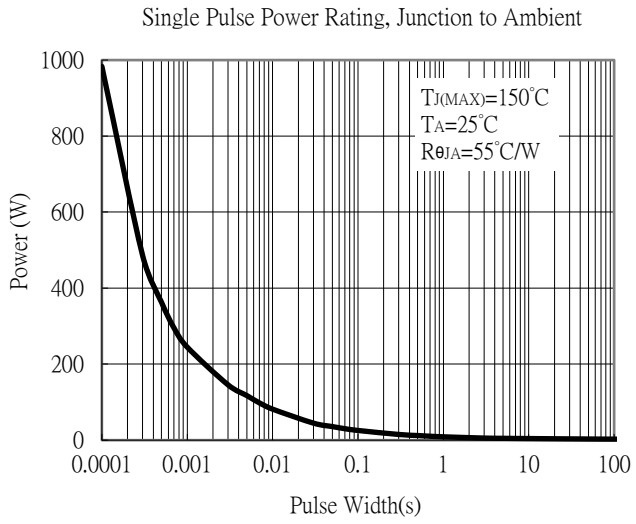
Maximum Safe Operating Area

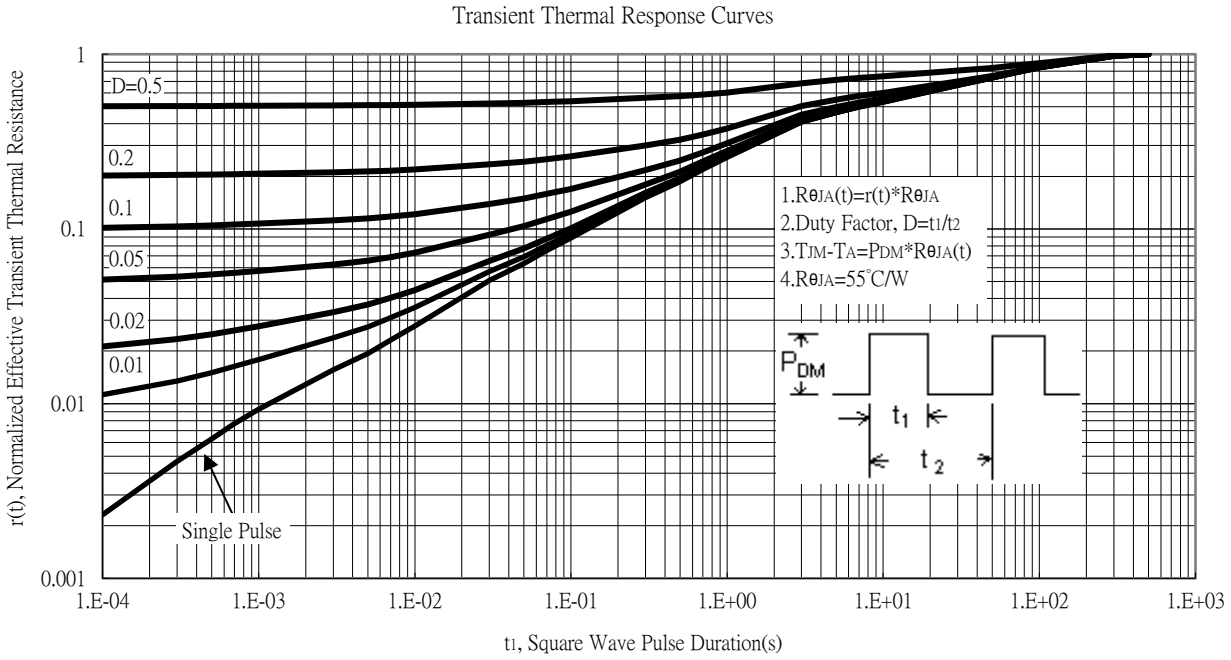


Maximum Drain Current vs Junction Temperature

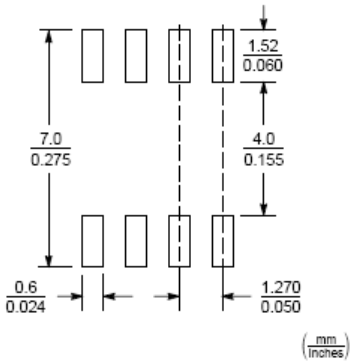


Typical Characteristics (Cont.)

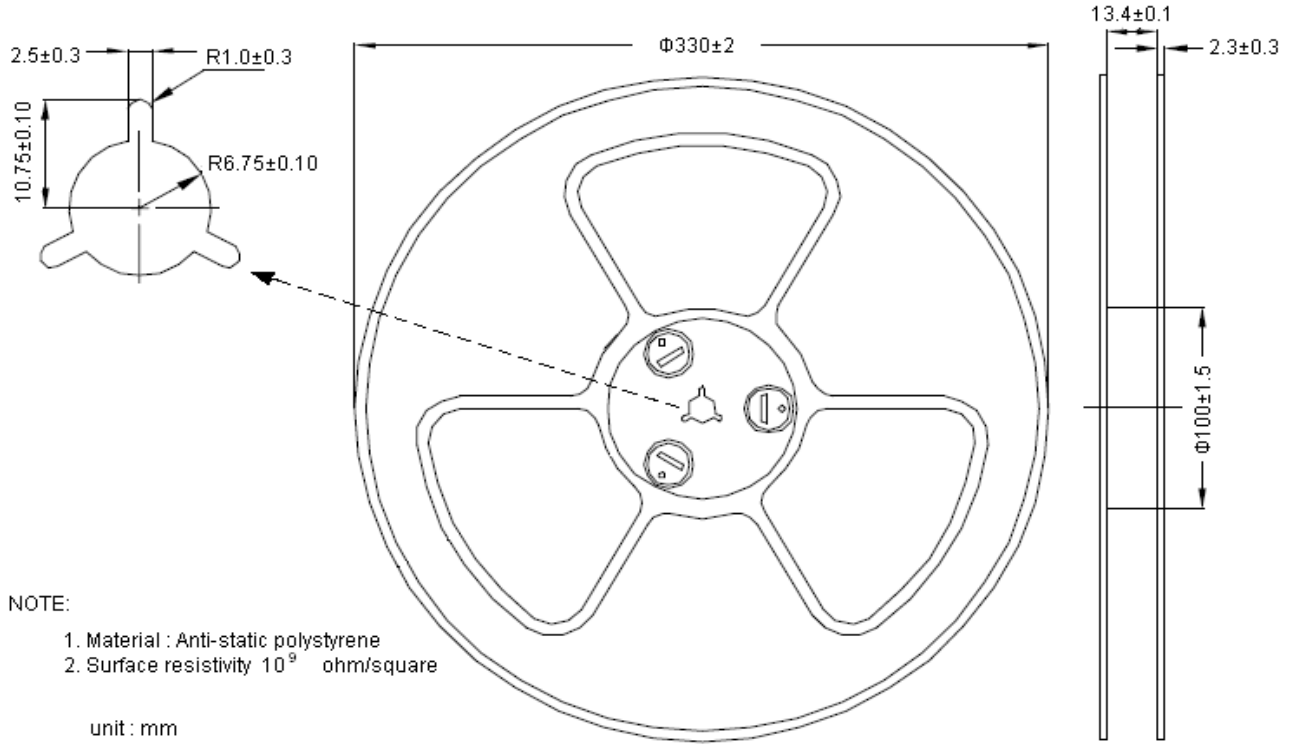




Recommended Soldering Footprint



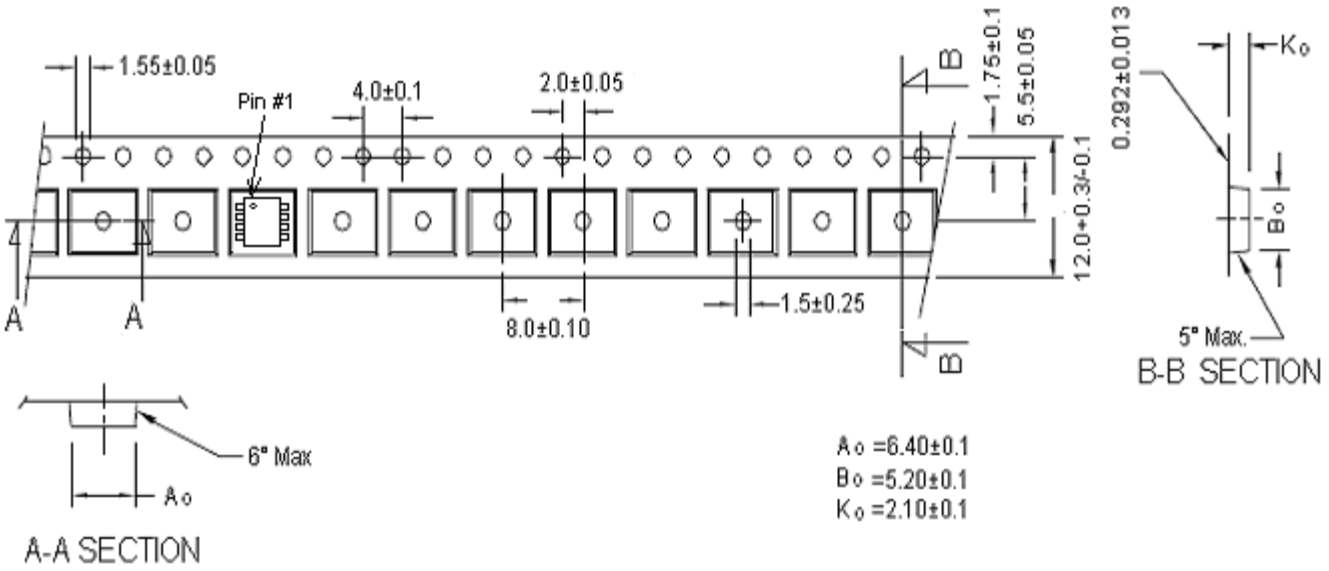
Reel Dimension



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

unit : mm

Carrier Tape Dimension

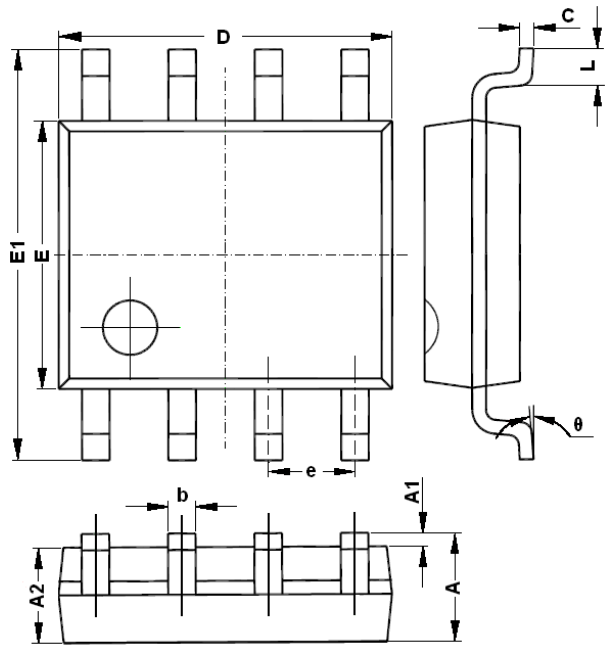


Ao =6.40±0.1
Bo =5.20±0.1
Ko =2.10±0.1

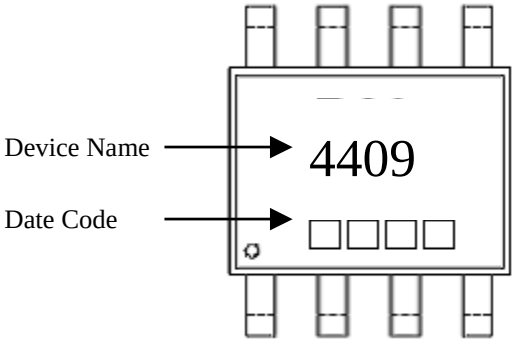
Notes:
1. 10 sprocket hole pitch cumulative tolerance ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material: conductive black polystyrene
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
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 : prodcution serial number, 01~99

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					