Product Summary

- V_{DS} -30V
- I_D -5.1A
- $R_{DS(ON)}$(at VGS=-10V) ＜49mohm
- $R_{DS(ON)}$(at VGS=-4.5V) ＜65mohm
- 100% ∇V_{DS} Tested

General Description

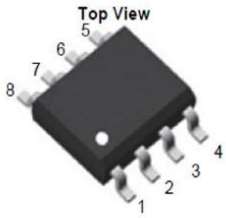
- Trench Power LV MOSFET technology
- High density cell design for low $R_{DS(ON)}$
- High Speed switching

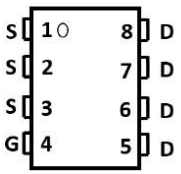
Applications

- Battery protection
- Load switching
- Power management

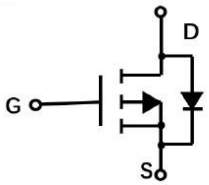


LOGO GK xxx CODE





SOP-8



Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	-30	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current	T_A=25℃	I_D	-5.1	A
	T_A=70℃		-4.1	
Pulsed Drain Current [A]		I_{DM}	-20	A
Total Power Dissipation	T_A=25℃	P_D	2.5	W
	T_A=70℃		1.6	W
Thermal Resistance Junction-to-Ambient [B]		$R_{\theta JA}$	50	℃/ W
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}=0V, I_D=-250μA	-30			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-30V,V_{GS}=0V			-1	μA
Gate-Body Leakage Current	I_{GSS}	V_{GS}=±20V, V_{DS}=0V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=-250μA	-1.0	-1.5	-2.4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-4A		36	49	mΩ
		V_{GS}=-4.5V, I_D=-3.5A		52	65	
Diode Forward Voltage	V_{SD}	I_S=-4A,V_{GS}=0V			-1.2	V
Dynamic Parameters						
Input Capacitance	C_{iss}	V_{DS}=-15V,V_{GS}=0V,f=1MHZ		719		pF
Output Capacitance	C_{oss}			78		
Reverse Transfer Capacitance	C_{rss}			64		
Switching Parameters						
Total Gate Charge	Q_g	V_{GS}=-10V,V_{DS}=-15V,I_D=-5.1A		14.23		nC
Gate-Source Charge	Q_{gs}			3.16		
Gate-Drain Charge	Q_{gd}			2		
Reverse Recovery Chrage	Q_{rr}	I_F=-5.1A, di/dt=100A/us		5.3		
Reverse Recovery Time	t_{rr}			30		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-10V, V_{DS}=-15V, I_D=5.1A R_{GEN}=3Ω		7.4		
Turn-on Rise Time	t_r			37		
Turn-off Delay Time	$t_{D(off)}$			31.6		
Turn-off fall Time	t_f			42		

A. Pulse Test: Pulse Width≤300us,Duty cycle ≤2%.

B. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance, where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design, while $R_{\theta JA}$ is determined by the board design. The maximum rating presented here is based on mounting on a 1 in 2 pad of 2oz copper.

RATING AND CHARACTERISTIC CURVES

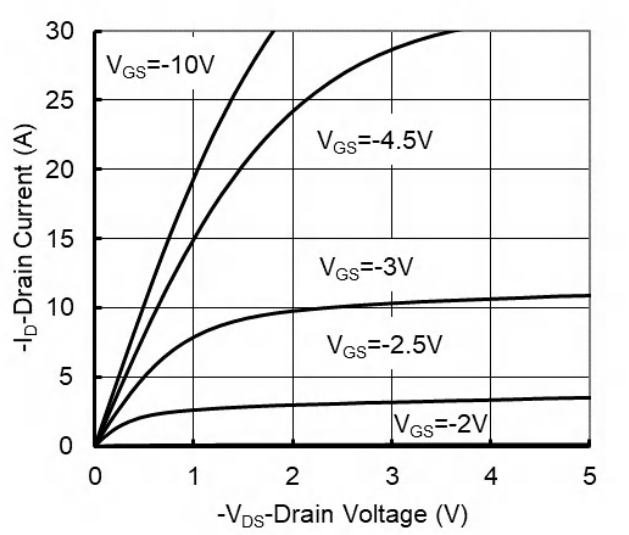


Figure1. Output Characteristics

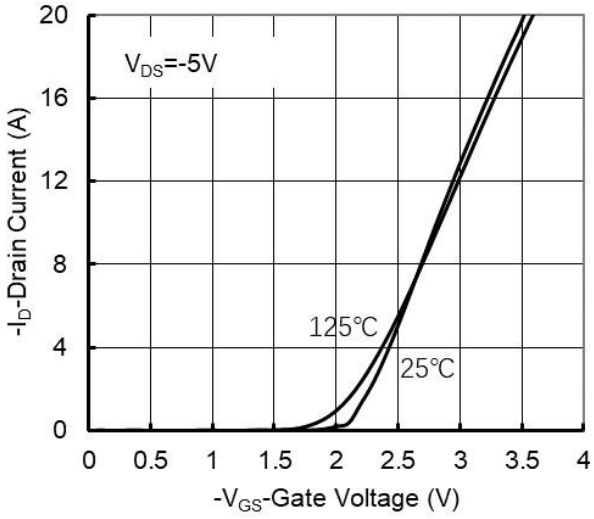


Figure2. Transfer Characteristics

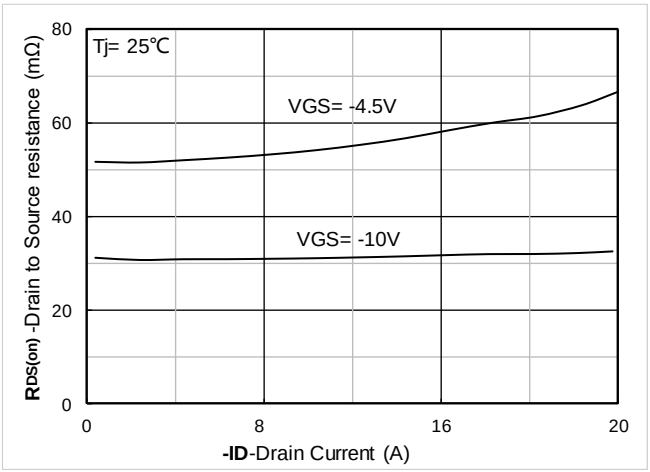


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

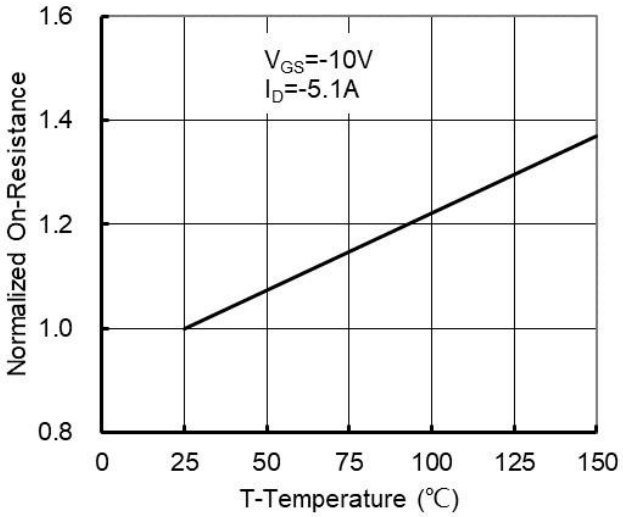


Figure 4: On-Resistance vs. Junction Temperature

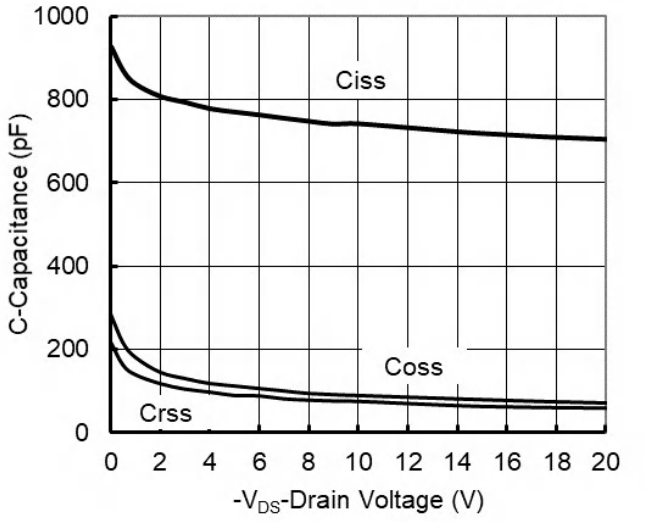


Figure5. Capacitance Characteristics

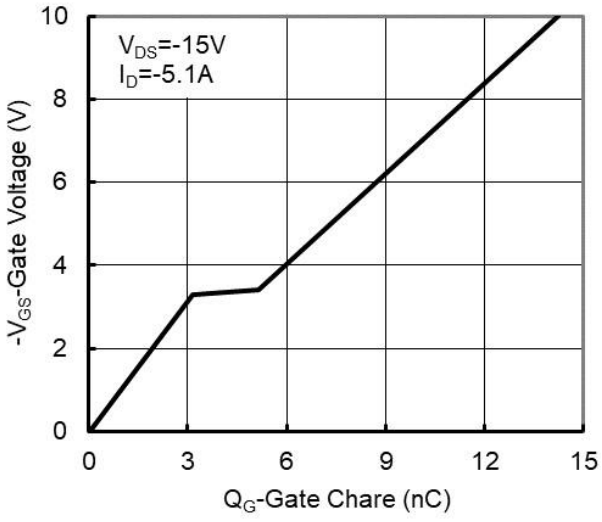


Figure6. Gate Charge

RATING AND CHARACTERISTIC CURVES

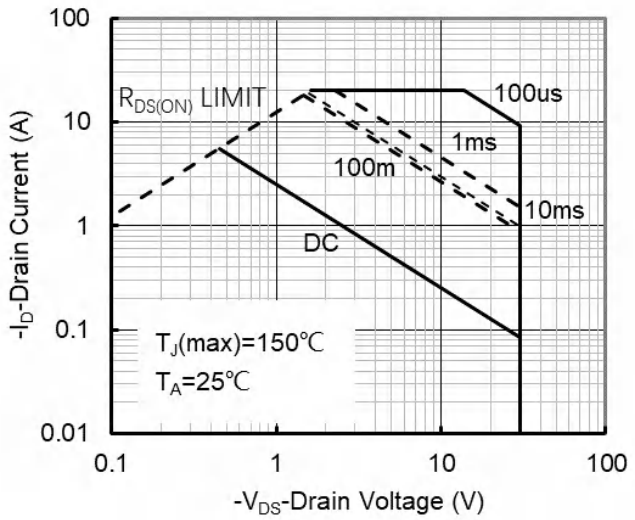


Figure7. Safe Operation Area

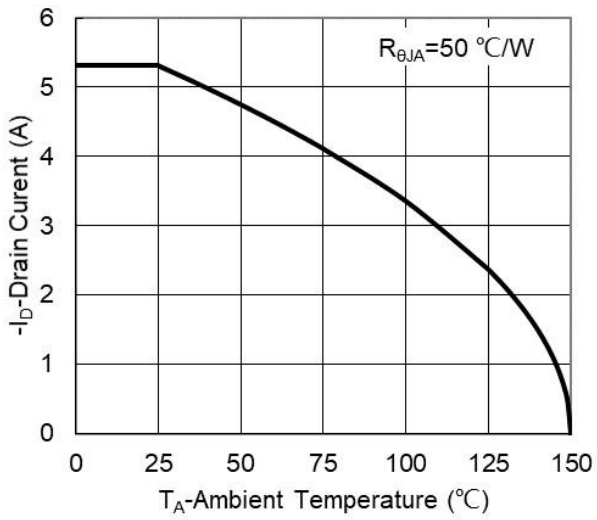


Figure8. Maximum Continuous Drain Current vs Ambient Temperature

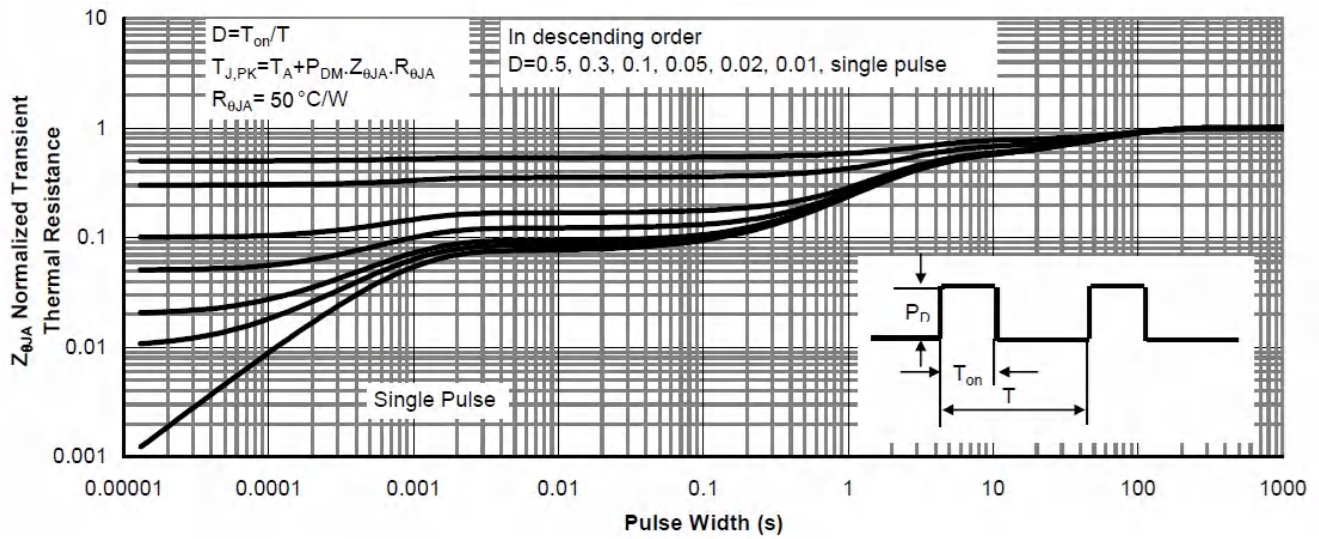
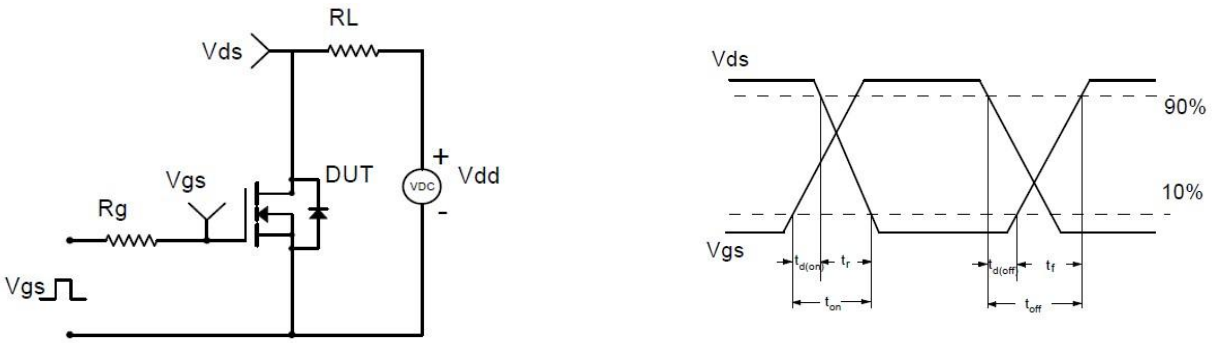
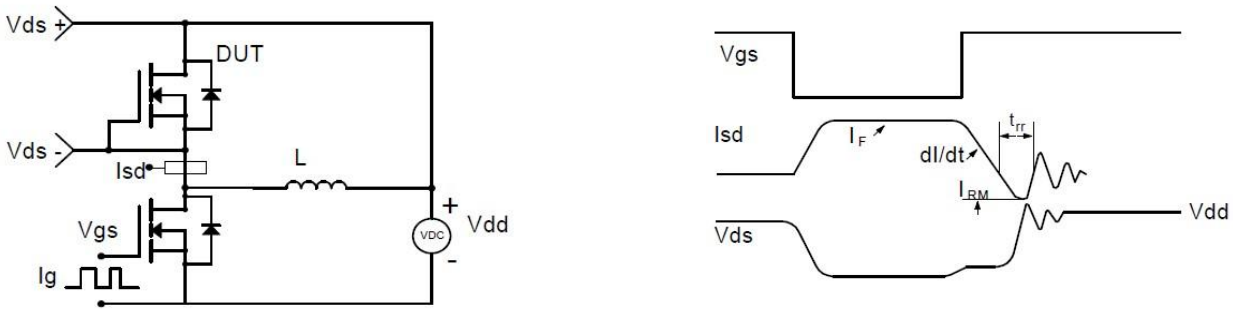


Figure9.Normalized Maximum Transient Thermal Impedance

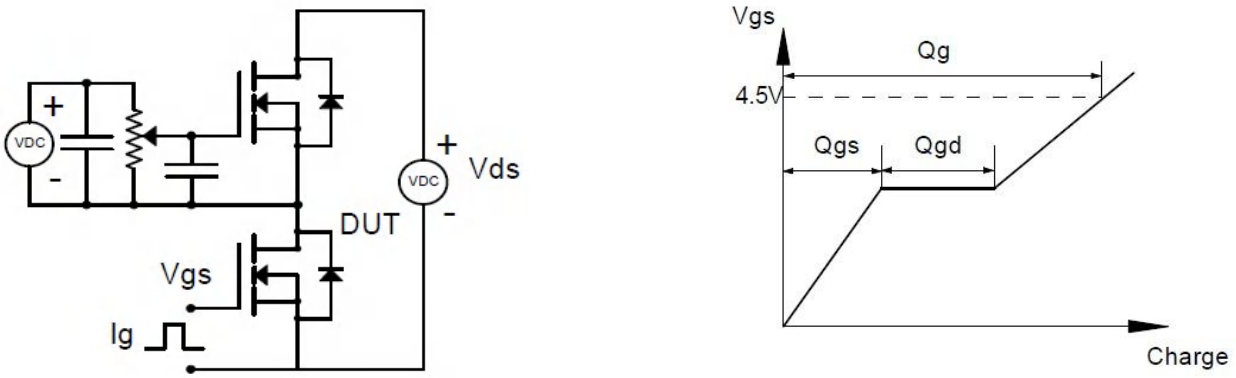
应用电路图



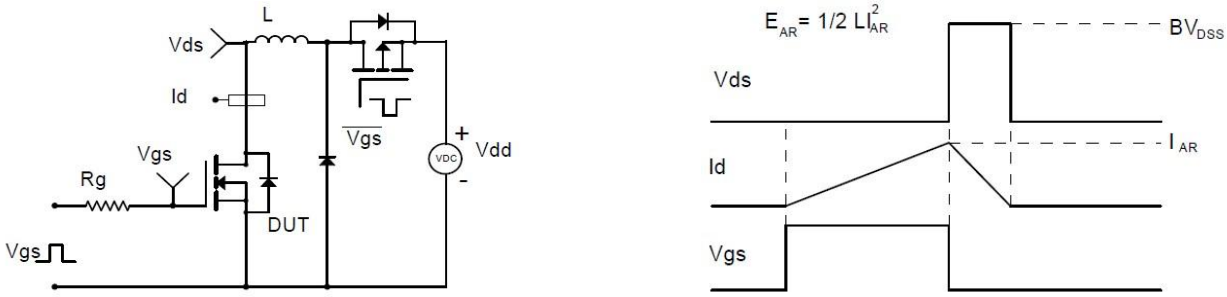
Resistive Switching Test Circuit & Waveforms



Diode Recovery Test Circuit & Waveforms



Gate Charge Test Circuit & Waveform

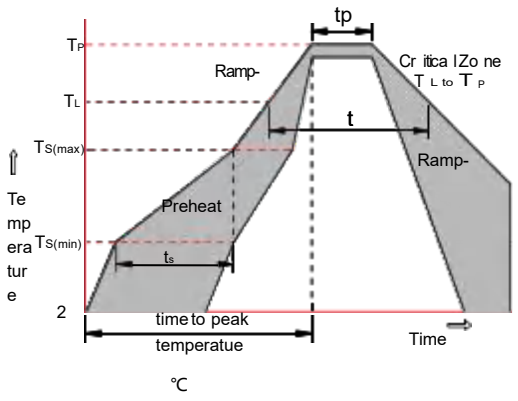


Unclamped Inductive Switching (UIS) Test Circuit & Waveforms

Soldering parameters

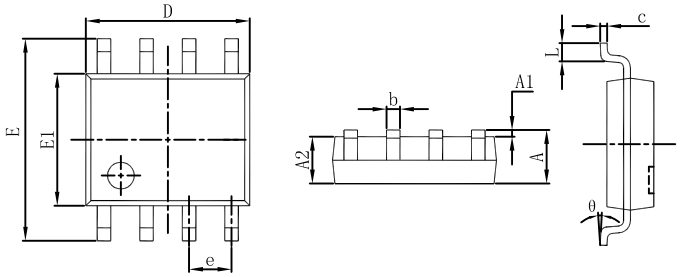
Reflow Condition		Pb-Free assembly (see as bellow)
Pre Heat	-Temperature Min ($T_{s(min)}$)	+150℃
	-Temperature Max($T_{s(max)}$)	+200℃
	-Time (Min to Max) (ts)	60-180 secs.
Average ramp up rate (Liquid us Temp (T_L) to peak)		3℃/sec. Max
$T_{s(max)}$ to T_L - Ramp-up Rate		3℃/sec. Max
Reflow	-Temperature(T_L)(Liquid us)	+217℃
	-Temperature(t_L)	60-150 secs.
Peak Temp (T_p)		+260(+0/-5)℃
Time within 5℃ of actual Peak Temp (t_p)		30 secs. Max
Ramp-down Rate		6℃/sec. Max
Time 25℃ to Peak Temp (T_P)		8 min. Max
Do not exceed		+260℃

FIG5: Reflow condition

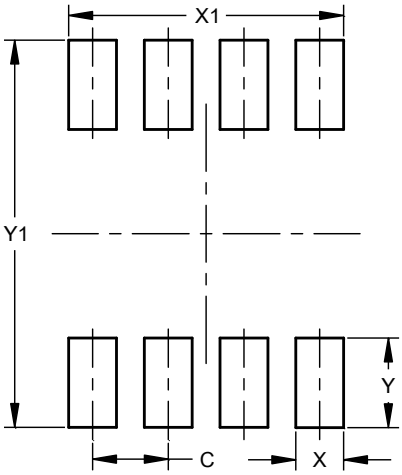


Package Dimensions & Suggested Pad Layout

SOP-8



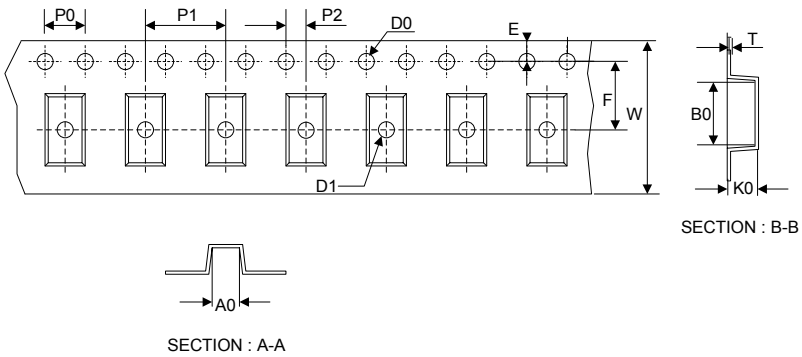
Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



Dimensions	Value (in mm)
C	1.27
X	0.70
X1	4.51
Y	2.00
Y1	7.00

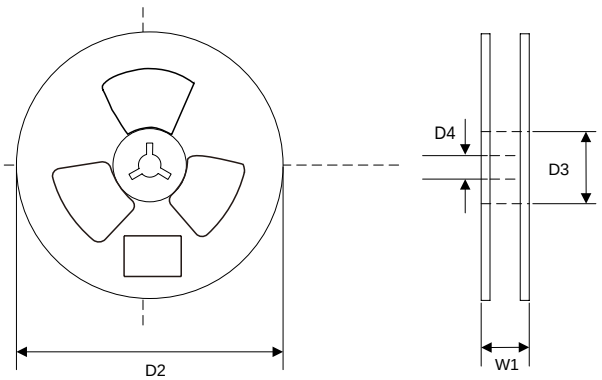
Tape & rell specification

Tape



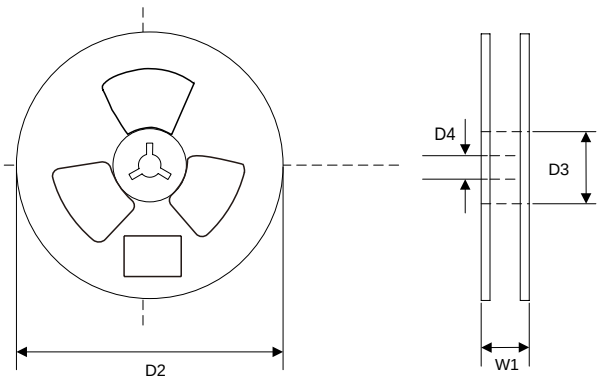
Symbol	Dimension (mm)
P0	4.00±0.20
P1	8.00±0.20
P2	2.00±0.20
D0	1.55±0.20
D1	1.55±0.20
E	1.75±0.15
F	5.50±0.20
W	12.00±0.20
A0	7.00±0.20
B0	5.70±0.20
K0	1.35±0.20
T	0.23±0.20

13” Reel



D2	330.0±5.0
D3	73Min.
D4	13.5±2.5
W1	16.0±3.0
Quantity: 3000PCS	

13” Reel



D2	330.0±5.0
D3	73Min.
D4	13.5±2.5
W1	16.0±3.0
Quantity: 4000PCS	

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