30V Dual P-Channel Enhancement Mode MOSFET

Description

The N4953C uses advanced trench technology to provide excellent $R_{DS(ON)}$， low gate charge and operation with gate voltages as low as 4.5V. This device is suitable for use as a load switch or in PWM applications.

General Features

- V_{DS} =-30V，I_D =-5.5A
  $R_{DS(ON)}$(Typ.)=55mΩ @V_{GS}=-4.5V
  $R_{DS(ON)}$(Typ.)=45mΩ @V_{GS}=-10V
- High power and current handing capability
- Lead free product is acquired
- Surface mount package

Application

100% UIS TESTED!

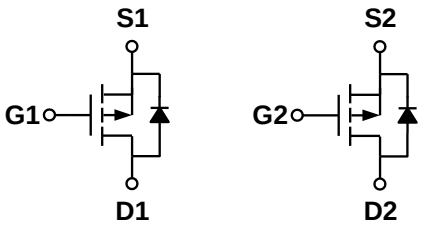
100% ΔVds TESTED!

- PWM applications
- Load switch

Package

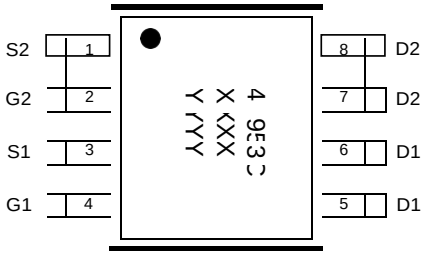
- SOP-8

Schematic diagram



Marking and pin assignment

SOP-8
(TOP VIEW)



Note：XXXX is the date code , YYYY is the Quality Code

Ordering Information

Part Number	Storage Temperature	Package	Devices Per Reel
PECN4953CS R-G	-55°C to +150°C	SOP-8	4000

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

parameter		symbol	limit	unit
Drain-source voltage		V_{DS}	-30	V
Gate-source voltage		V_{GS}	±20	V
Drain Current-Continuous (Silicon Limited)	T_A=25°C	I_D	-5.5	A
	T_A=75°C		-4	
Pulsed Drain Current (Package Limited)		I_{DM}	-22	A
Maximum power dissipation	T_A=25°C	P_D	3.0	W
	T_A=75°C		2.1	
Operating junction Temperature range		Tj	-55—150	℃

Electrical Characteristics (TA=25℃ unless otherwise noted)

Parameter	Symbol	Condition	Min	Typ	Max	Unit
OFF Characteristics						
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	I_{GSS}	V_{DS}=0V, V_{GS}=±20V	-	-	±100	nA
ON Characteristics						
Gate threshold voltage	$V_{GS(th)}$	V_{DS}=V_{GS}, I_D=-250μA	-0.7	-1.3	-2.0	V
Drain-source on-state resistance	$R_{DS(ON)}$	V_{GS}=-10V, I_D=-5.5A	-	45	65	mΩ
		V_{GS}=-4.5V, I_D=-4.5A	-	55	90	
Forward transconductance	gfs	V_{GS}=-5V, I_D=-5A	-	5	-	S
Dynamic Characteristics						
Input capacitance	C_{ISS}	V_{DS}=-15V ,V_{GS}=0V f=1.0MHz	-	700	-	pF
Output capacitance	C_{OSS}		-	120	-	
Reverse transfer capacitance	C_{RSS}		-	70	-	
Switching Characteristics						
Turn-on delay time	$t_{D(ON)}$	V_{DD}=-15V I_D=-5.5A V_{GEN}=-10V R_L=10ohm R_{GEN}=-6ohm	-	9	-	ns
Rise time	tr		-	5	-	
Turn-off delay time	$t_{D(OFF)}$		-	28	-	
Fall time	tf		-	12.5	-	
Total gate charge	Qg	V_{DS}=-15V,I_D=-5.5A V_{GS}=-10V	-	14	-	nC
Gate-source charge	Qgs		-	3.1	-	
Gate-drain charge	Qgd		-	3	-	

Thermal Characteristics

Parameter		Symbol	Typ	Max	Unit
Maximum Junction-to-Ambient[A]	≤ 10s	$R_{θJA}$	33	40	℃/W
Maximum Junction-to-Ambient[A]	Steady-State		59	75	
Maximum Junction-to-Lead[B]	Steady-State	$R_{θJC}$	16	24	

A:The value of $R_{θJA}$ is measured with the device mounted on 1 in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any given application depends on the user's specific board design. The current rating is based on the t ≤ 10s thermal resistance rating.

B: The $R_{θJA}$ is the sum of the thermal impedence from junction to lead $R_{θJC}$ and lead to ambient.

Typical Performance Characteristics

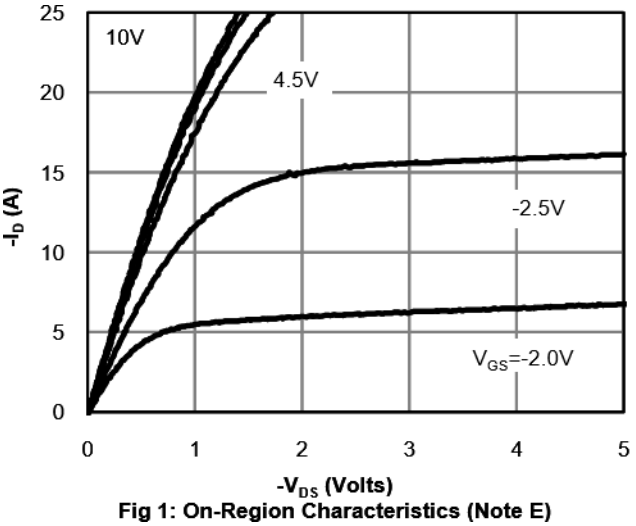


Fig 1: On-Region Characteristics (Note E)

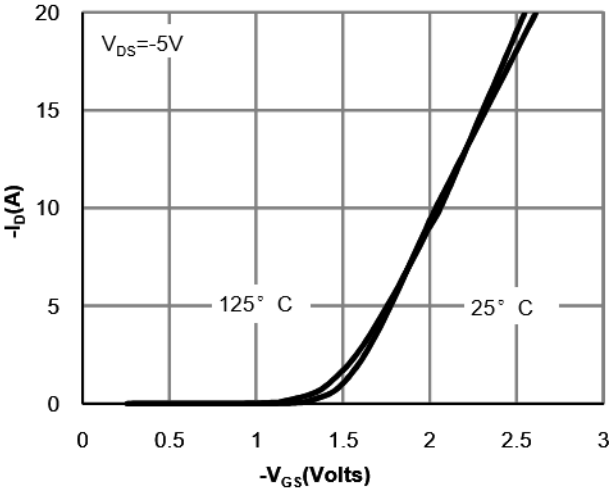


Figure 2: Transfer Characteristics (Note E)

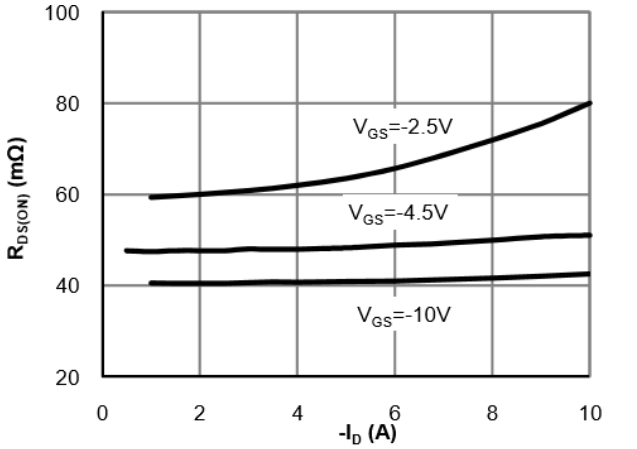


Figure 3: On-Resistance vs. Drain Current and Gate Voltage (Note E)

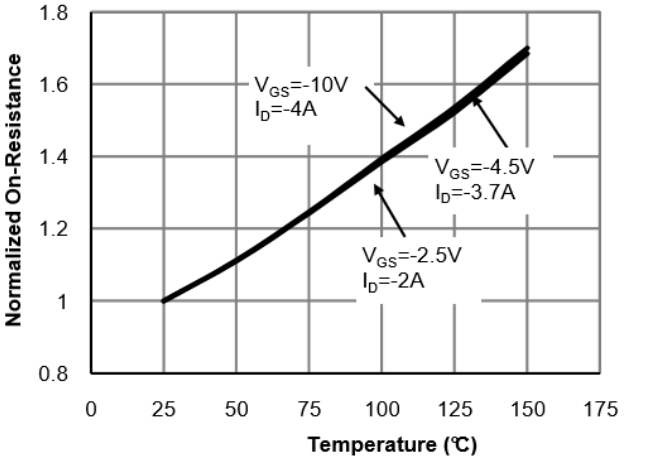


Figure 4: On-Resistance vs. Junction Temperature (Note E)

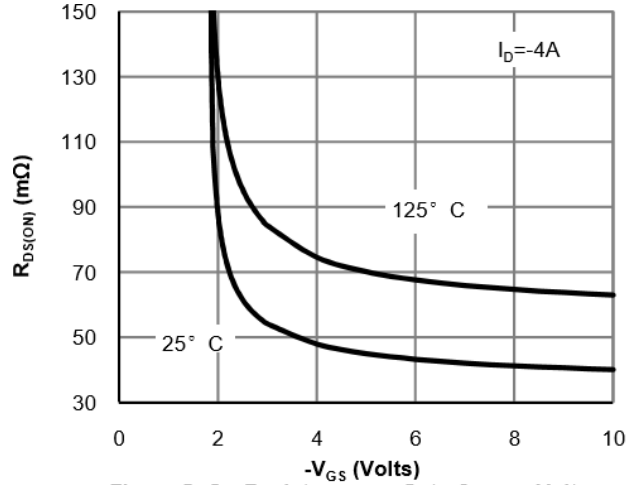


Figure 5: On-Resistance vs. Gate-Source Voltage (Note E)

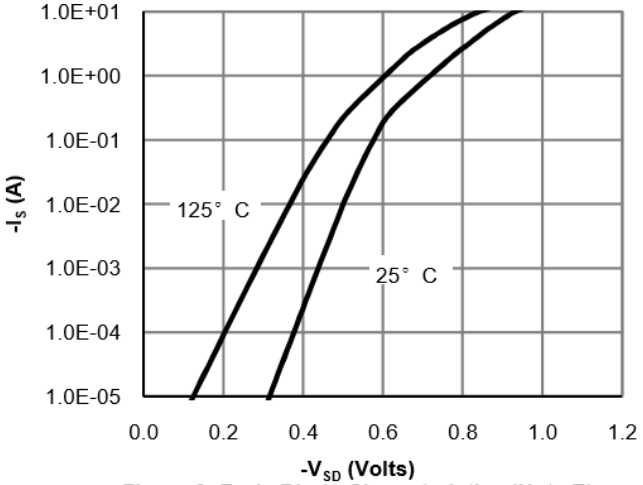


Figure 6: Body-Diode Characteristics (Note E)

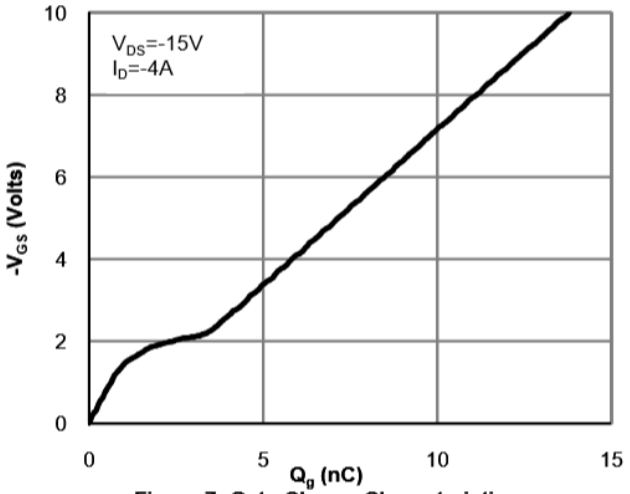


Figure 7: Gate-Charge Characteristics

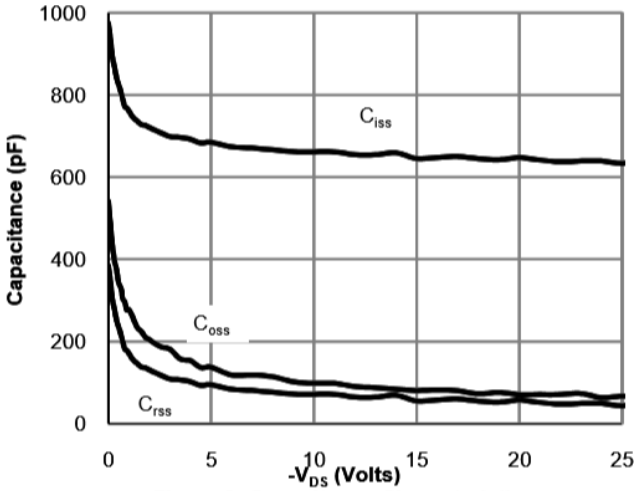


Figure 8: Capacitance Characteristics

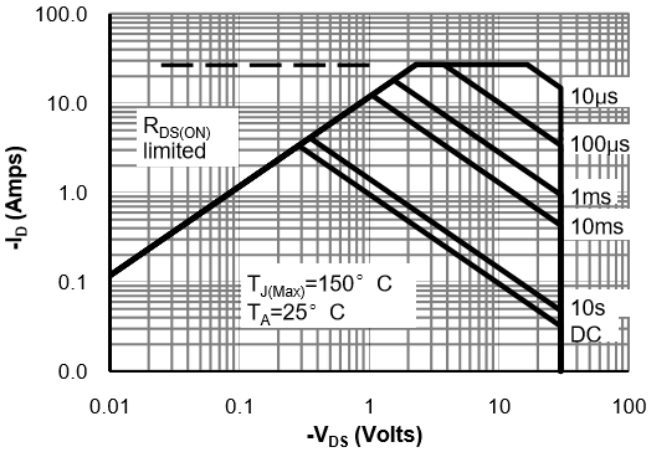


Figure 9: Maximum Forward Biased Safe Operating Area (Note F)

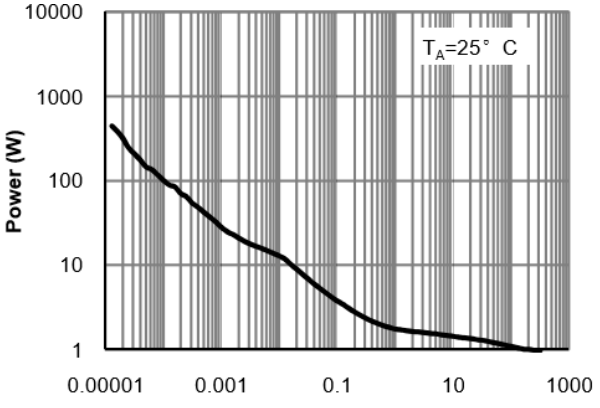


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note F)

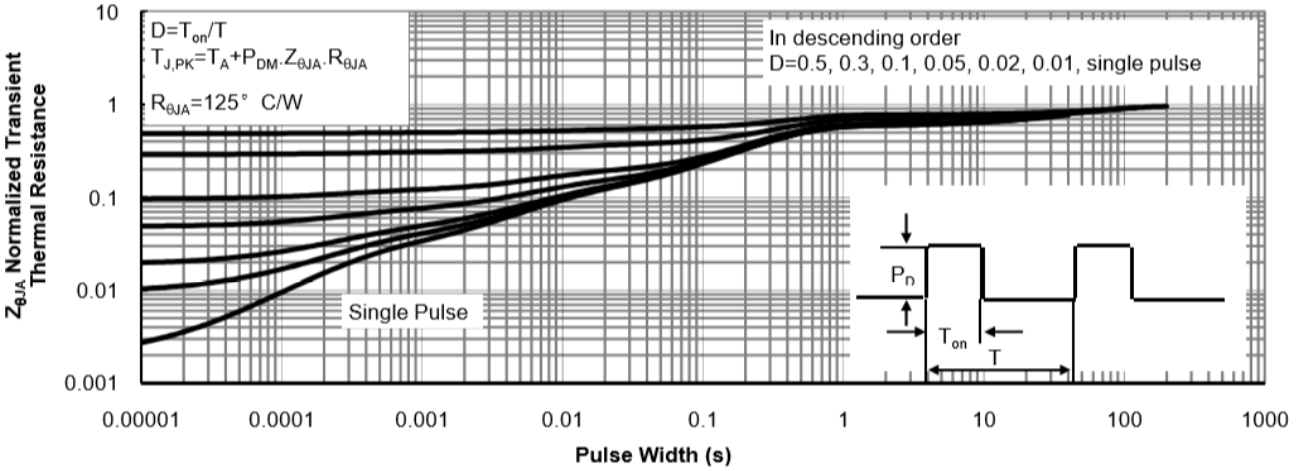
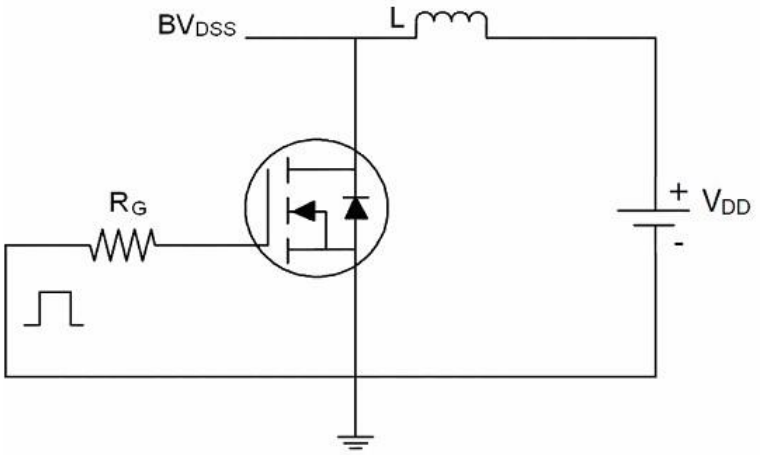


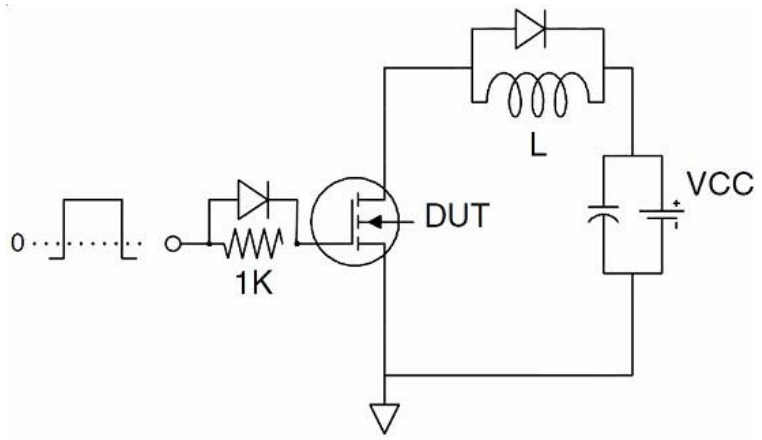
Figure 11: Normalized Maximum Transient Thermal Impedance (Note F)

Test Circuit：

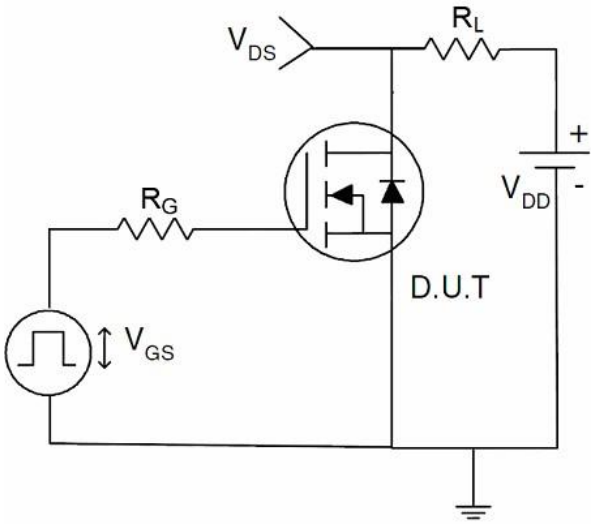
1、EAS Test Circuit



2、Gate Charge Test Circuit

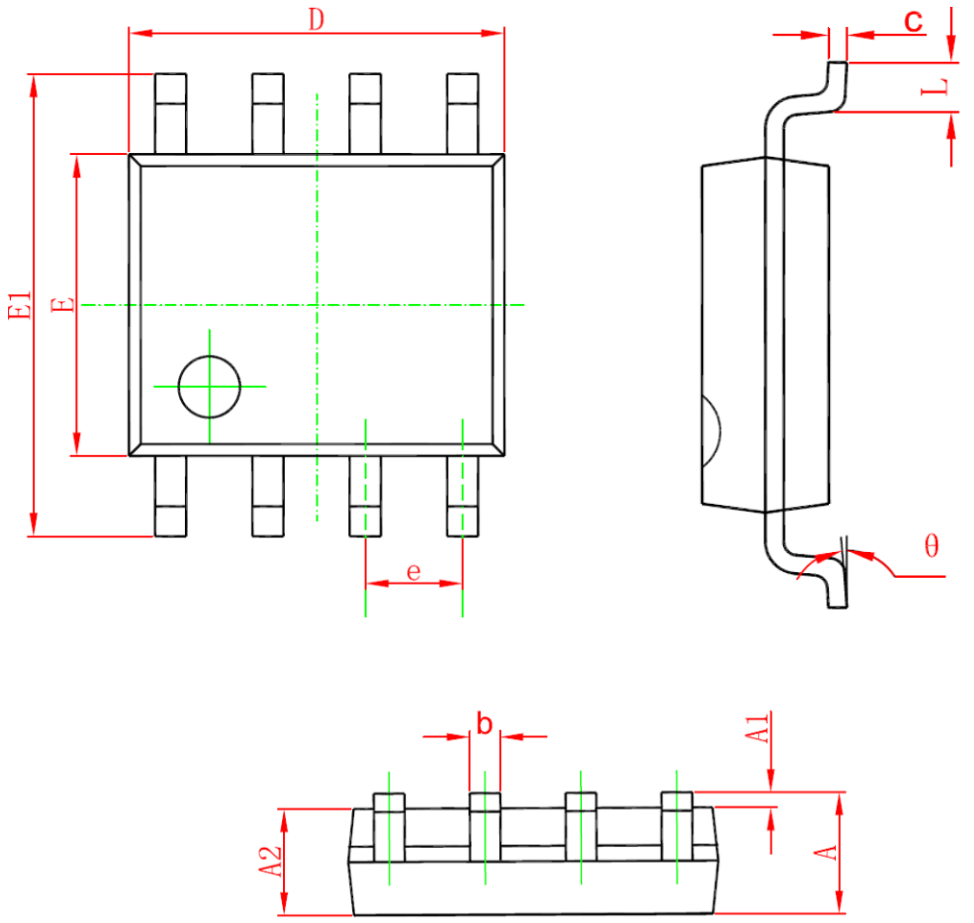


3、Switch Time Test Circuit



Package Information

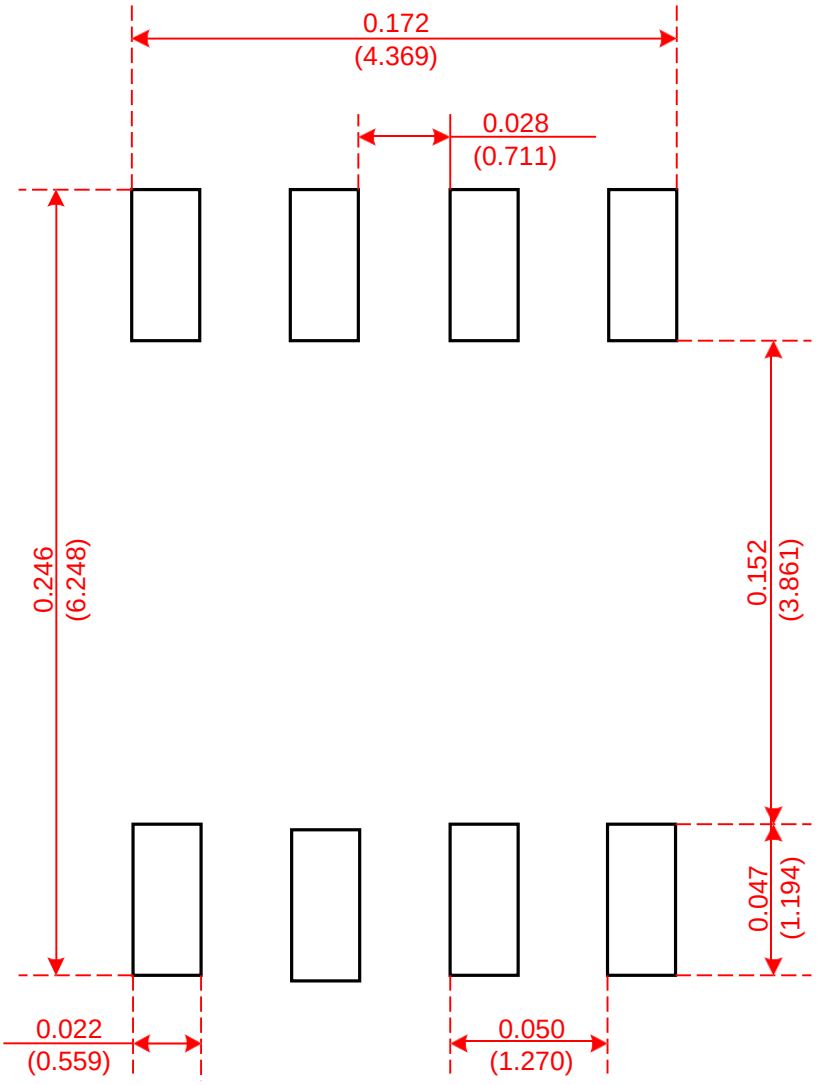
- **SOP-8**



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	0.006	0.010
D	4.700	5.100	0.185	0.200
E	3.800	4.000	0.150	0.157
E1	5.800	6.200	0.228	0.244
e	1.270(BSC)		0.050(BSC)	
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°

Recommended Minimum Pads

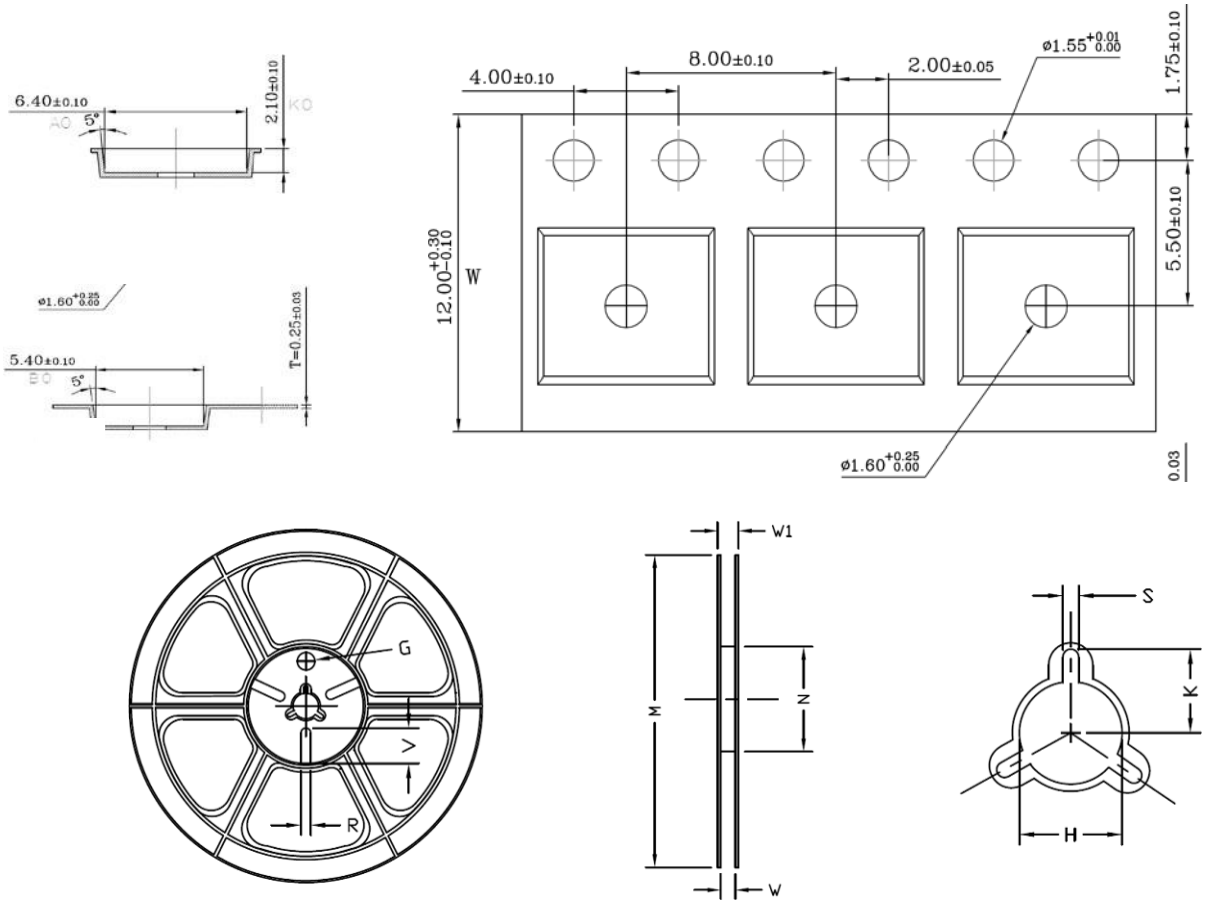
- **SOP-8**



Recommended Minimum Pads
Dimensions in Inches/(mm)

Tape and Reel

- **SOP-8**



Tape Size	Reel Size	M	N	W	W1	H	K	S	G	R	V
12mm	Φ330	Φ330.00 ±0.50	Φ97.00 ±0.30	13.00 ±0.30	17.40 ±1.00	Φ13.00 ±0.5	10.6	2.00 ±0.50	—	—	—

Unit Per Reel:
4000pcs