



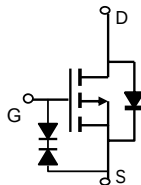
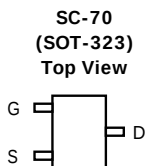
AO7403, AO7403L (Green Product) P-Channel Enhancement Mode Field Effect Transistor

General Description

The AO7403 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge, and operation with gate voltages as low as 1.8V, in the small SOT323 footprint. It can be used for a wide variety of applications, including load switching, low current inverters and low current DC-DC converters. It is ESD protected to 2KV HBM. AO7403L (Green Product) is offered in a lead-free package.

Features

V_{DS} (V) = -20V
 I_D = -0.7A
 $R_{DS(ON)} < 470m\Omega$ ($V_{GS} = -4.5V$)
 $R_{DS(ON)} < 625m\Omega$ ($V_{GS} = -2.5V$)
 $R_{DS(ON)} < 900m\Omega$ ($V_{GS} = -1.8V$)



Absolute Maximum Ratings $T_A=25^\circ\text{C}$ unless otherwise noted

Parameter	Symbol	Maximum	Units
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current ^A	I_D	-0.7	A
$T_A=25^\circ\text{C}$			
Current ^A	$T_A=70^\circ\text{C}$	-0.5	
Pulsed Drain Current ^B	I_{DM}	-3	
Power Dissipation ^A	P_D	0.35	W
$T_A=25^\circ\text{C}$			
$T_A=70^\circ\text{C}$		0.22	
Junction and Storage Temperature Range	T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

Thermal Characteristics

Parameter	Symbol	Typ	Max	Units
Maximum Junction-to-Ambient ^A	$R_{\theta JA}$	300	360	$^\circ\text{C/W}$
$t \leq 10s$				
Maximum Junction-to-Ambient ^A	$R_{\theta JA}$	350	425	$^\circ\text{C/W}$
Steady-State				
Maximum Junction-to-Lead ^C	$R_{\theta JL}$	280	320	$^\circ\text{C/W}$
Steady-State				

Electrical Characteristics (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV _{DSS}	Drain-Source Breakdown Voltage	I _D =-250μA, V _{GS} =0V	-20			V
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-16V, V _{GS} =0V T _J =55°C			-1 -5	μA
I _{GSS}	Gate-Body leakage current	V _{DS} =0V, V _{GS} =±8V			±10	μA
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-0.5	-0.6	-0.9	V
I _{D(ON)}	On state drain current	V _{GS} =-4.5V, V _{DS} =-5V	-3			A
R _{DS(ON)}	Static Drain-Source On-Resistance	V _{GS} =-4.5V, I _D =-0.7A T _J =125°C		388 542	470 660	mΩ
		V _{GS} =-2.5V, I _D =-0.6A		519	625	mΩ
		V _{GS} =-1.8V, I _D =-0.5A		666	900	mΩ
g _{FS}	Forward Transconductance	V _{DS} =-5V, I _D =-0.7A		1.7		S
V _{SD}	Diode Forward Voltage	I _S =-0.5A, V _{GS} =0V		-0.86	-1	V
I _S	Maximum Body-Diode Continuous Current				-0.4	A
DYNAMIC PARAMETERS						
C _{iss}	Input Capacitance	V _{GS} =0V, V _{DS} =-10V, f=1MHz		114		pF
C _{oss}	Output Capacitance			17		pF
C _{rss}	Reverse Transfer Capacitance			14		pF
R _g	Gate resistance	V _{GS} =0V, V _{DS} =0V, f=1MHz		12		Ω
SWITCHING PARAMETERS						
Q _g	Total Gate Charge	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-0.7A		1.44		nC
Q _{gs}	Gate Source Charge			0.14		nC
Q _{gd}	Gate Drain Charge			0.35		nC
t _{D(on)}	Turn-On DelayTime	V _{GS} =-4.5V, V _{DS} =-10V, R _L =14.3Ω, R _{GEN} =3Ω		6.5		ns
t _r	Turn-On Rise Time			6.5		ns
t _{D(off)}	Turn-Off DelayTime			18.2		ns
t _f	Turn-Off Fall Time			5.5		ns
t _{rr}	Body Diode Reverse Recovery Time	I _F =-0.7A, dI/dt=100A/μs		10		ns
Q _{rr}	Body Diode Reverse Recovery Charge	I _F =-0.7A, dI/dt=100A/μs		3		nC

A: The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The value in any a given application depends on the user's specific board design. The current rating is based on the t≤ 10s thermal resistance rating.

B: Repetitive rating, pulse width limited by junction temperature.

C: The R_{θJA} is the sum of the thermal impedance from junction to lead R_{θJL} and lead to ambient.

D: The static characteristics in Figures 1 to 6, 12, 14 are obtained using 80μs pulses, duty cycle 0.5% max.

E: These tests are performed with the device mounted on 1 in² FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C. The SOA curve provides a single pulse rating.

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TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

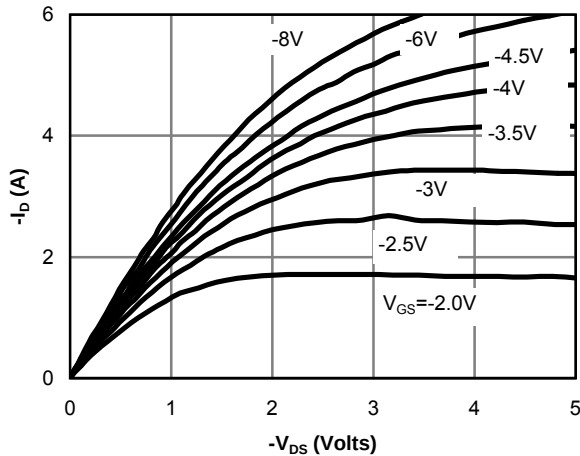


Fig 1: On-Region Characteristics

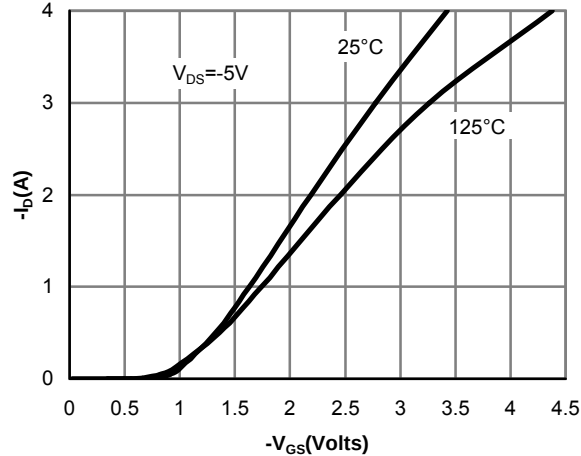


Figure 2: Transfer Characteristics

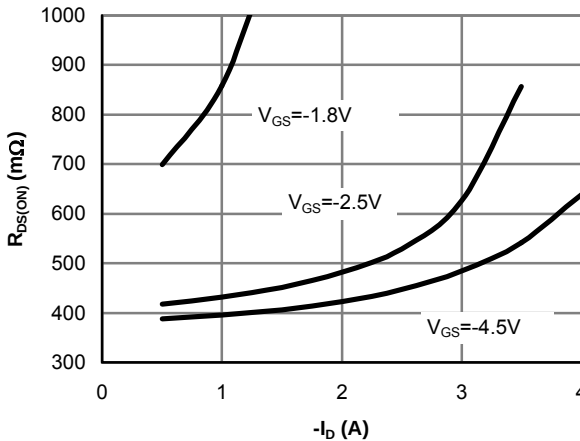


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

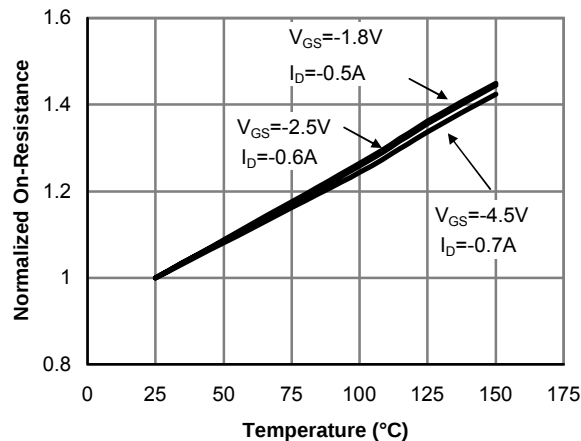


Figure 4: On-Resistance vs. Junction Temperature

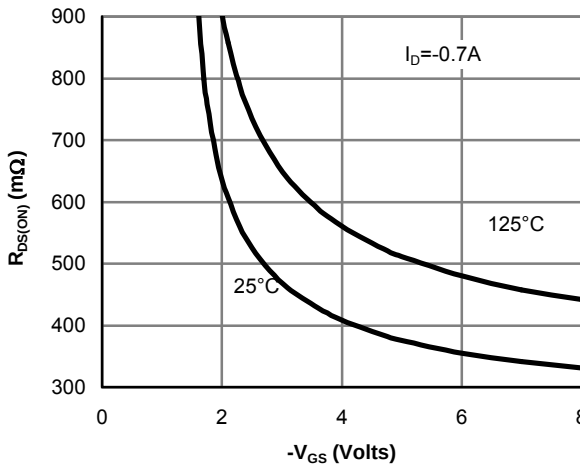


Figure 5: On-Resistance vs. Gate-Source Voltage

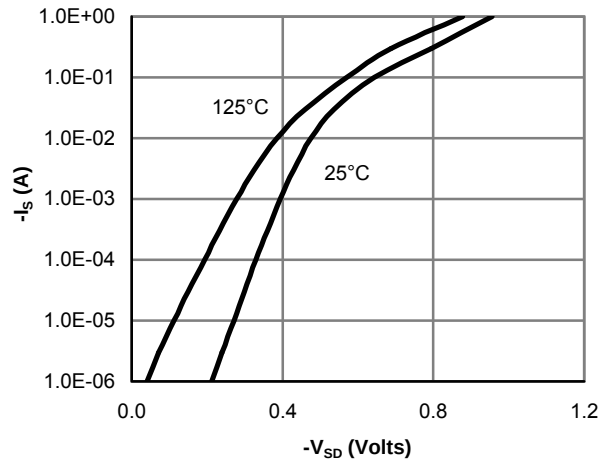


Figure 6: Body-Diode Characteristics

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

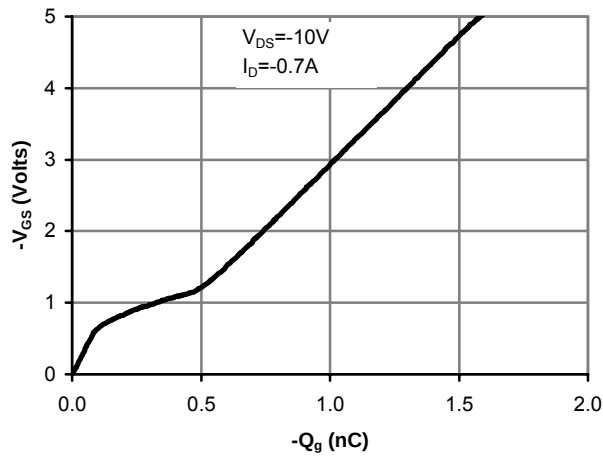


Figure 7: Gate-Charge Characteristics

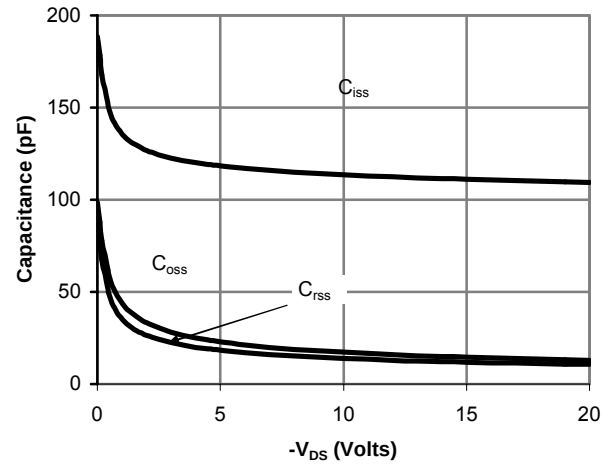


Figure 8: Capacitance Characteristics

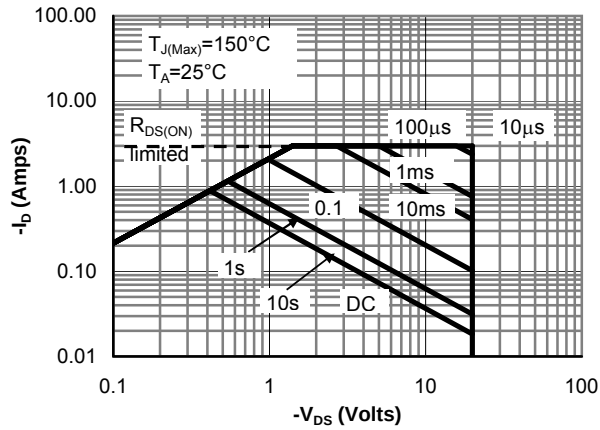


Figure 9: Maximum Forward Biased Safe Operating Area (Note E)

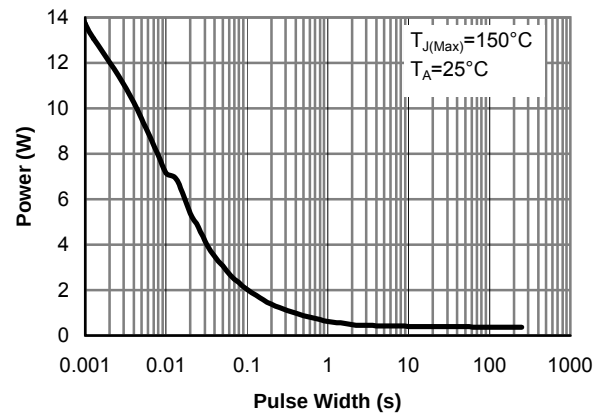


Figure 10: Single Pulse Power Rating Junction-to-Ambient (Note E)

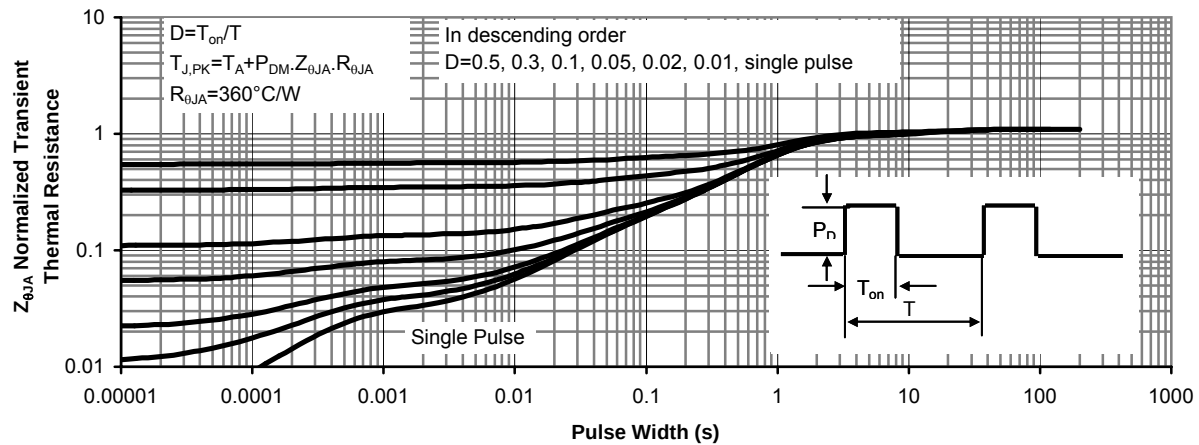


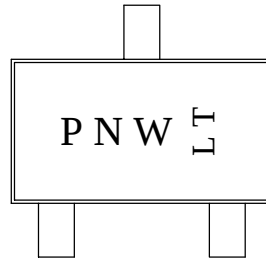
Figure 11: Normalized Maximum Transient Thermal Impedance



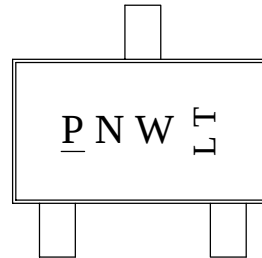
ALPHA & OMEGA
SEMICONDUCTOR, LTD.

Document No.	PD-00128
Version	rev C
Title	AO7403 Marking Description

SC-70(3L) PACKAGE MARKING DESCRIPTION



Standard product

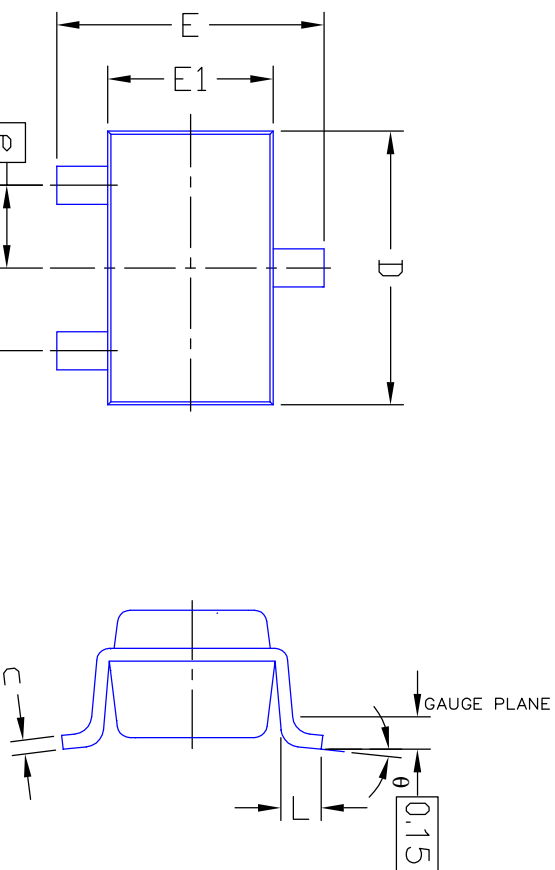


Green product

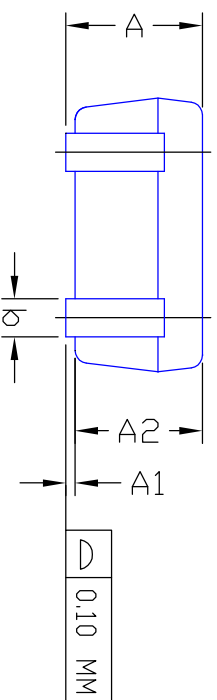
NOTE:

P - Product number code
N - Assembly&Foundry location code
W - Year and Week code
LT - Assembly lot code.

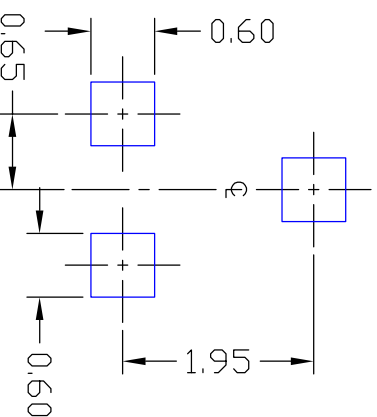
PART NO.	DESCRIPTION	CODE (P&N)
AO7403	Standard product	3&N
AO7403L	Green product	<u>3</u> &N



- NOTE
- 1.ALL DIMENSIONS ARE IN MILLIMETERS.
 - 2.DIMENSIONS ARE INCLUSIVE OF PLATING.
 - 3.PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
 - 4.DIE IS FACING UP FOR MOLD AND FACING DOWN FOR TRIM/FORM .i.e:REVERSE TRIM/FORM.
 5. DIMENSION L IS MEASURED IN GAUGE PLANE.
 6. CONTROLLING DIMENSION IS MILLIMETER. CONVERTED INCH DIMENSIONS ARE NOT NECESSARILY EXACT.



RECOMMENDATION OF LAND PATTERN



SYMBOLS	DIMENSIONS IN MILLIMETERS			DIMENSIONS IN INCHES		
	MIN	NOM	MAX	MIN	NOM	MAX
A	—	—	1.10	—	—	0.043
A1	0.00	—	0.10	0.00	—	0.004
A2	0.7	0.9	1.00	0.028	0.035	0.039
b	0.15	—	0.30	0.006	—	0.012
c	0.08	—	0.22	0.003	—	0.009
D	1.85	2.10	2.15	0.073	0.083	0.085
E	1.80	2.30	2.40	0.071	0.091	0.094
e	0.65 BSC			0.026 BSC		
e1	1.30 BSC			0.051 BSC		
E1	1.1	1.30	1.4	0.043	0.051	0.055
L	0.26	0.36	0.46	0.010	0.014	0.018
θ	0°	4°	8°	0°	4°	8°

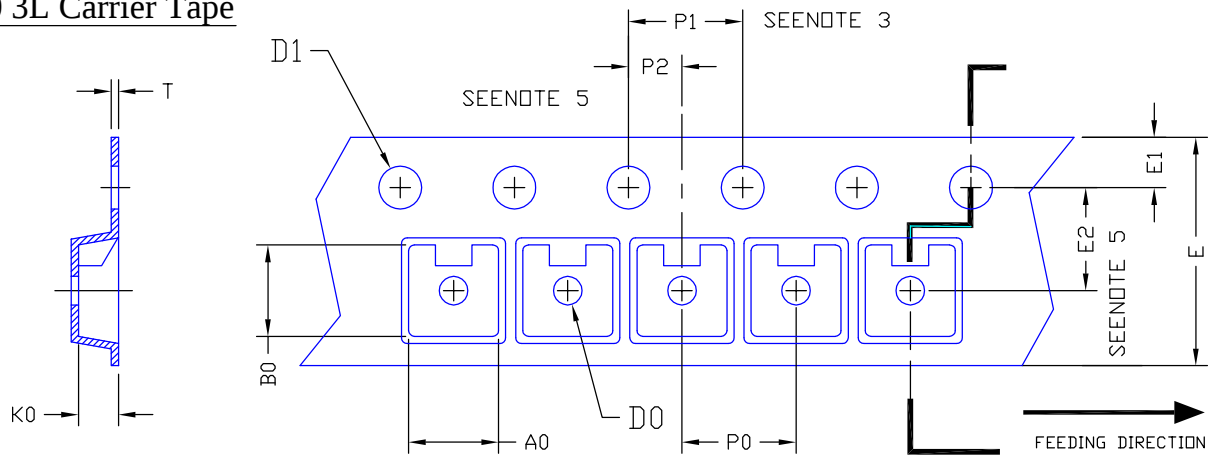
UNIT: mm

UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES DECIMAL X.X ± XXX ± XXXX ± INTERPRET DIM AND TOL PER ASME Y14.5M – 1994		THIRD ANGLE PROJECTION		Document No.	PD-00012
PRINTING IS SCALED TO FIT DO NOT SCALE DRAWING		Title		Version	rev C
				SC-70-3L PACKAGE OUTLINE	





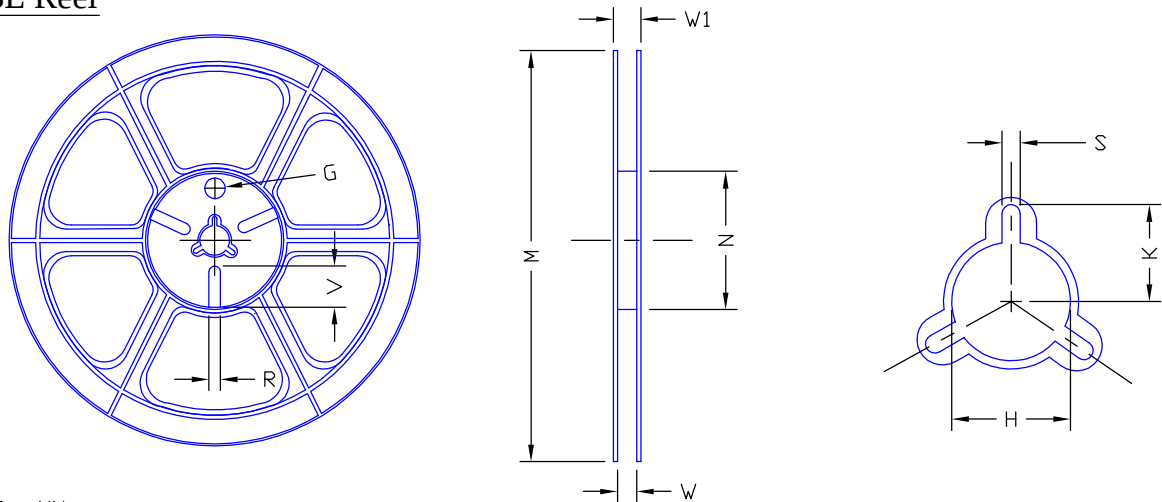
SC-70 3L Carrier Tape



UNIT: MM

PACKAGE	A0	B0	K0	D0	D1	E	E1	E2	P0	P1	P2	T
SOT-23 (8 mm)	2.40 ± 0.10	2.40 ± 0.10	1.19 ± 0.10	1.00 MIN	1.55 ± 0.05	8.00 ± 0.30	1.75 ± 0.10	3.50 ± 0.05	4.00 ± 0.10	4.00 ± 0.10	2.00 ± 0.05	0.25 ± 0.05

SC-70 3L Reel



UNIT: MM

TAPE SIZE	REEL SIZE	M	N	W	W1	H	K	S	G	R	V
8 mm	$\phi 180$	$\phi 180.00$ ± 0.50	$\phi 60.50$	9.00 ± 0.30	11.40 ± 1.00	$\phi 13.00$ $+0.50$ -0.20	10.60	2.00 ± 0.50	$\phi 9.00$	5.00	18.00

SC-70 3L Tape

Leader / Trailer
& Orientation

