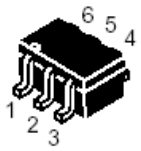
Silicon NPN Epitaxial Planer Transistor(Tr1)
Silicon PNP Epitaxial Planer Transistor(Tr2)

L4601D*W1T1G

Pb-Free pacage is available

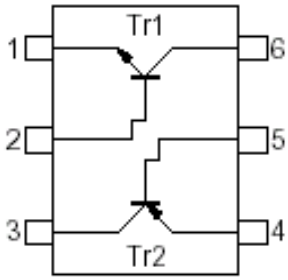


SC88

● **Tr1**

MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Collector-Emitter Voltage	V_{CEO}	50	V
Collector-Base Voltage	V_{CBO}	60	V
Emitter-Base Voltage	V_{EBO}	6	V
Collector current-continuoun	IC	150	mAdc



● **Tr2**

MAXIMUM RATINGS

Parameter	Symbol	Ratings	Unit
Collector-Emitter Voltage	V_{CEO}	-50	V
Collector-Base Voltage	V_{CBO}	-60	V
Emitter-Base Voltage	V_{EBO}	-6	V
Collector current-continuoun	IC	-150	mAdc

THERMAL CHARATEERISTICS

Characteristic	Symbol	Max	Unit
Total Device Dissipation FR-5 Board, (1) T_A=25°C	P_D	380	mW
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	328	°C/W
Junction and Storage Temperature	Tj ,Tstg	-55 to +150	°C

DEVICE MARKING

L4602DQW1T1G=5C L4601DRW1T1G=6C L4601DSW1T1G=7C

L4601D*W1T1G

● Tr1

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (IC=1mA)	V(BR)CEO	50	-	-	V
Emitter-Base Breakdown Voltage (IE=50 μ A)	V(BR)EBO	6	-	-	V
Collector-Base Breakdown Voltage (IC=50 μ A)	V(BR)CBO	60	-	-	V
Collector Cutoff Current (VCB=60V)	ICBO	-	-	0.1	μ A
EMITTER CUTOFF CURRENT VEB=7V	IEBO	-	-	0.1	μ A
ON CHARACTERISTICS					
DC Current Gain (IC=1mA, VCE=6.0V)	Hfe	120	-	560	
Collector-Emitter Saturation Voltage (IC=50mA,IB=5mA)	VCE(SAT)	-	-	0.4	V
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain-Bandwidth Product (VCE = 12.0V; IE =-2.0 mA,f=100MHZ)	Ft	-	180	-	MHz
Output Capacitance(VCE=12V,f=1.0MHz)	Cobo	-	2	3.5	Pf

● Tr2

ELECTRICAL CHARACTERISTICS (TA=25°C unless otherwise noted)

Characteristic	Symbol	Min	Typ	Max	Unit
OFF CHARACTERISTICS					
Collector-Emitter Breakdown Voltage (IC=-1mA)	V(BR)CEO	-50	-	-	V
Emitter-Base Breakdown Voltage (IE=-50 μ A)	V(BR)EBO	-6	-	-	V
Collector-Base Breakdown Voltage (IC=-50 μ A)	V(BR)CBO	-60	-	-	V
Collector Cutoff Current (VCB=-60V)	ICBO	-	-	-0.1	μ A
Emitter Cutoff Current (VBE=-6V)	IEBO			-0.1	μ A

	Q	R	S
hFE	120-270	180-390	270-560

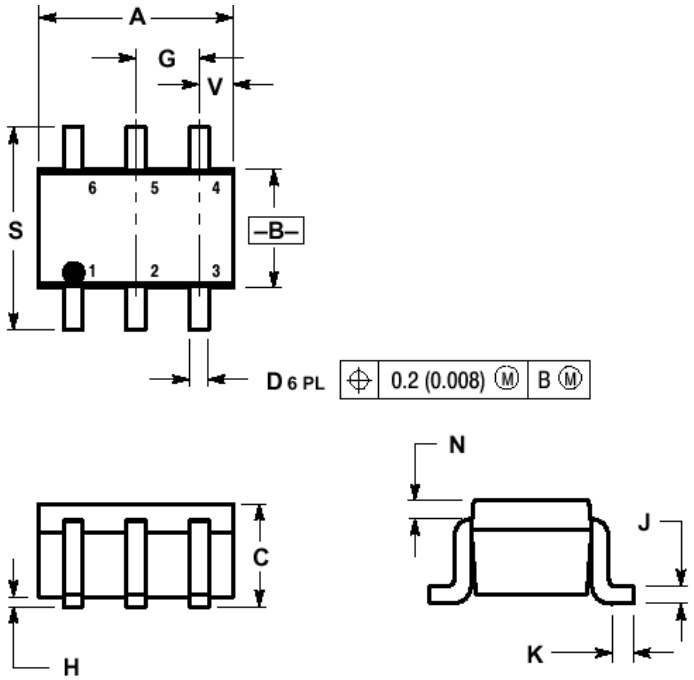
L4601D*W1T1G

ON CHARACTERISTICS

DC Current Gain (IC=-1mA, VCE=-6.0V)	Hfe	120	-	560	
Collector-Emitter Saturation Voltage (IC=-50mA,IB=-5mA)	VCE(SAT)	-	-	-0.5	V
SMALL-SIGNAL CHARACTERISTICS					
Current-Gain-Bandwidth Product (VCE = -12.0V; IE =2.0 mA,f=300MHZ)	Ft	-	140	-	MHz
Output Capacitance(VCB=-12V,f=1.0MHz)	Cobo	-	4	5	Pf

PACKAGE DIMENSIONS

SC-88



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.

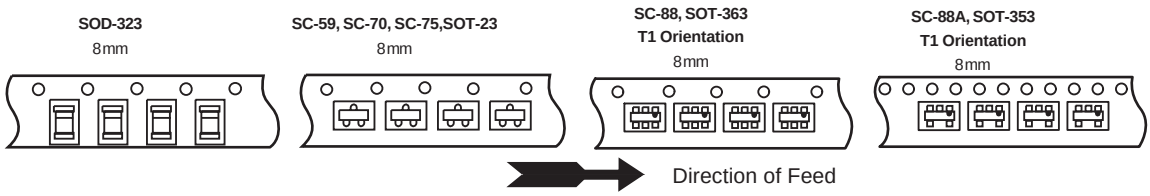
	INCHES		MILLIMETERS	
DIM	**MIN**	**MAX**	**MIN**	**MAX**
A	0.071	0.087	1.80	2.20
B	0.045	0.053	1.15	1.35
C	0.031	0.043	0.80	1.10
D	0.004	0.012	0.10	0.30
G	0.026BSC		0.65BSC	
H	—	0.004	—	0.10
J	0.004	0.010	0.10	0.25
K	0.004	0.012	0.10	0.30
N	0.008 REF		0.20 REF	
S	0.079	0.087	2.00	2.20
V	0.012	0.016	0.30	0.40

Tape & Reel and Packaging Specifications for Small-Signal Transistors, FETs and Diodes

Embossed Tape and Reel is used to facilitate automatic pick and place equipment feed requirements. The tape is used as the shipping container for various products and requires a minimum of handling. The antistatic/conductive tape provides a secure cavity for the product when sealed with the “peel–back” cover tape.

- Two Reel Sizes Available (7"and 13",)
- Used for Automatic Pick and Place Feed Systems
- Minimizes Product Handling
- EIA 481, –1, –2
- SOT–23, SC–70/SOT–323, SC–89, SC–88/SOT–363, SC–88A/SOT–353, SOD–323, SOD-523 in 8 mm Tape

Use the standard device title and add the required suffix as listed in the option table below (Table 1). Note that the individual reels have a finite number of devices depending on the type of product contained in the tape. Also note the minimum lot size is one full reel for each line item, and orders are required to be in increments of the single reel quantity.

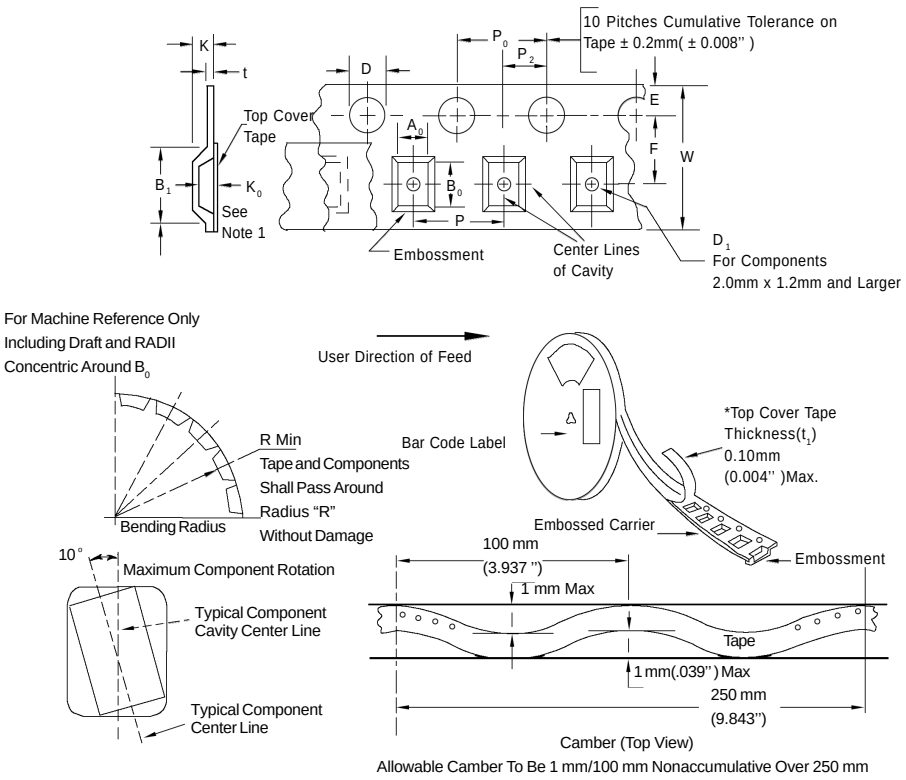


Typical Reel Orientations

Table 1. EMBOSSED TAPE AND REEL ORDERING INFORMATION

Package	Tape Width (mm)	Pitch mm	Reel Size mm(inch)	Devices Per Reel and Minimum Order Quantity	Device Suffix
SOT–23	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SC–70/SOT–323	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SC–89	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SC–88/SOT-363	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SC–88A/SOT-353	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SOD-323	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3
SOD-523	8	4	178	(7)	3,000 T1
	8		330	(13)	10,000 T3

EMBOSSED TAPE AND REEL DATA FOR DISCRETES
CARRIER TAPE SPECIFICATIONS



DIMENSIONS

Tape Size	B_1 Max	D	D_1	E	F	K	P_0	P_2	RMin	TMax	WMax
8mm	4.55mm (.179")	1.5+0.1mm - 0.0	1.0Min (.039")	1.75±0.1mm (.069±.004)	3.5±0.05mm (.138±.002")	2.4mmMax (.094")	4.0±0.1mm (.157±.004")	2.0±0.1mm (.079±.002")	25mm (.98")	0.6mm (.024")	8.3mm (.327")
12mm	8.2mm (.323")	(.059+.004" - 0.0)	1.5mmMin (.060")		5.5±0.05mm (.217±.002")	6.4mmMax (.252")			30mm (1.18")		12±.30mm (.470±.012")
16mm	12.1mm (.476")				7.5±0.10mm (.295±.004")	7.9mmMax (.311")					16.3mm (.642")
24mm	20.1mm (.791")				11.5±0.1mm (.453±.004")	11.9mmMax (.468")					24.3mm (.957")

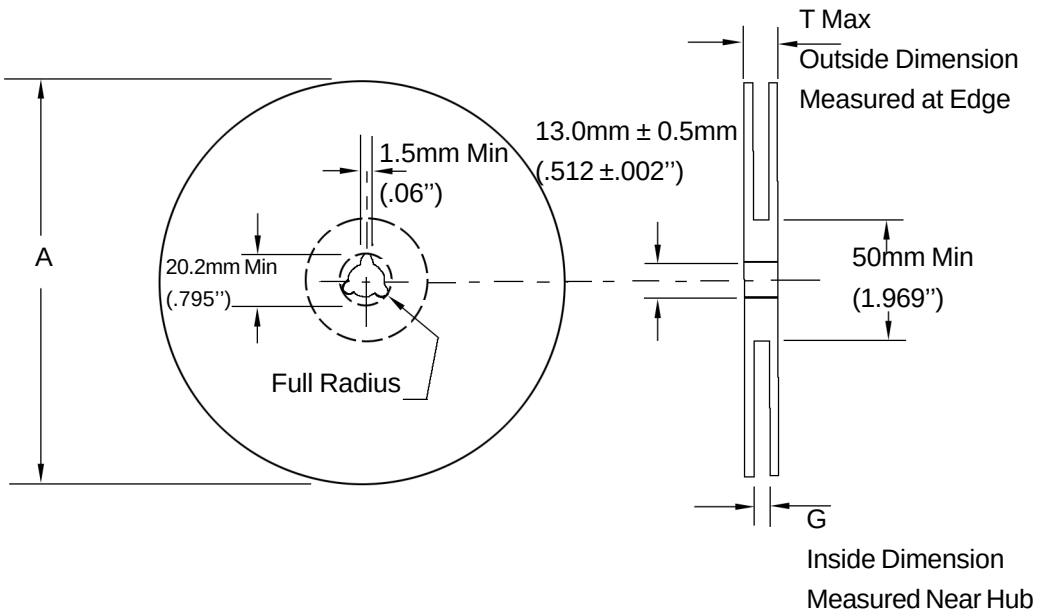
Metric dimensions govern - English are in parentheses for reference only.

NOTE 1: A_0, B_0, and K_0 are determined by component size. The clearance between the components and the cavity must be within .05 mm min. to.50 mm max.,

NOTE 2: the component cannot rotate more than 10° within the determined cavity.

NOTE 3: If B_1 exceeds 4.2 mm (.165") for 8 mm embossed tape, the tape may not feed through all tape feeders.

EMBOSSED TAPE AND REEL DATA
FOR DISCRETES



Size	A Max	G	T Max
8 mm	330mm (12.992")	8.4mm+1.5mm, -0.0 (.33"+.059", -0.00)	14.4mm (.56")
12mm	330mm (12.992")	12.4mm+2.0mm, -0.0 (.49 "+ .079", -0.00)	18.4mm (.72")
16mm	360mm (14.173")	16.4mm+2.0mm, -0.0 (.646"+.078", -0.00)	22.4mm (.882")
24 mm	360mm (14.173")	24.4mm+2.0mm, -0.0 (.961"+.070", -0.00)	30.4mm (1.197")

Reel Dimensions

Metric Dimensions Govern — English are in parentheses for reference only

Storage Conditions

Temperature: 5 to 40 Deg.C (20 to 30 Deg. C is preferred)
Humidity: 30 to 80 RH (40 to 60 is preferred)
Recommended Period: One year after manufacturing
(This recommended period is for the soldering condition only. The characteristics and reliabilities of the products are not restricted to this limitation)