
1A 3-TERMINAL POSITIVE VOLTAGE REGULATOR

FEATURES

- < **Output Current up to 1A**
- < **Output Voltage: 5V**
- < **The accuracy of the output voltage is $\pm 4\%$ at full temperature**
- < **Internal short circuit current limiting protection**
- < **Internal Thermal Overload Protection**
- < **Output Transistor Safe-area Protection**
- < **Low Load Regulation**
- < **Stable Performance in High Temperature**

PRODUCT DESCRIPTION

The TS7805 is three terminal positive voltage regulator with 1.0A output current.

The TS7805 is complete with internal current limiting, thermal shutdown protection, and safe-area compensation which make it virtually immune from output overload. If adequate heat sinking is provided, this regulator can deliver output currents up to 1A.

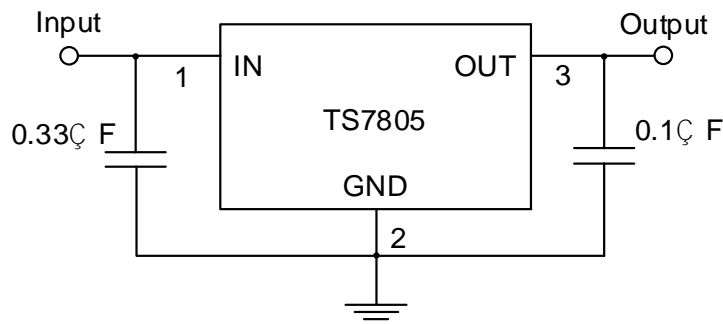
The TS7805 is Pb-Free Device. Operating Junction Temperature: -40 to $+125$.

The TS7805 is available in the industry-standard TO-220-3L, TO-252-2L, TO-263-2L packages.

APPLICATIONS

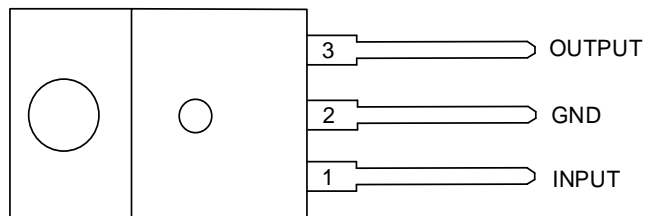
- < **Battery-Powered Applications**
- < **Power Converter/Inverter**
- < **Portable Devices**
- < **Microprocessor Power Supply**

Typical Application

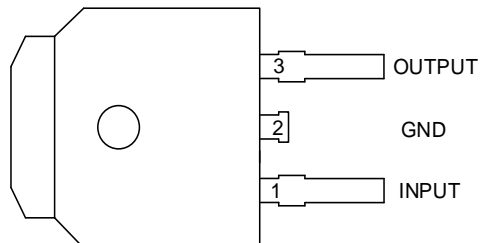


PIN ASSIGNMENTS

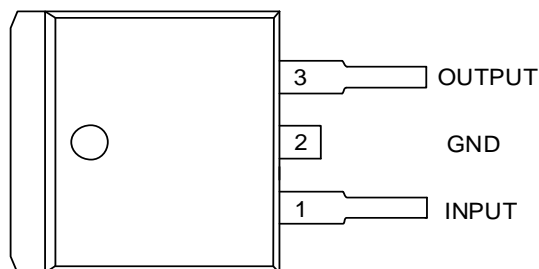
TO-220-3L (Front View)



TO-252-2L (Top View)



TO-263-2L (Top View)



PIN DESCRIPTIONS

Pin Number	Pin Name	Function
1	INPUT	Voltage Input
2	GND	Ground
3	OUTPUT	Voltage Output

ORDERING INFORMATION

Model	Part Number	Eco Plan	Package	Output Voltage (V)	Container, Pack Qty
TS7805	TS7805TO2203LT	RoHS	TO-220-3L	5.0	Tube, 50
TS7805	TS7805TO2522LR	RoHS	TO-252-2L	5.0	Reel, 2500
TS7805	TS7805TO2632LR	RoHS	TO-263-3L	5.0	Reel, 800

ABSOLUTE MAXIMUM RATINGS

Over operating free-air temperature range (unless otherwise noted) ⁽¹⁾

Parameter	Min	Max	Unit
Input Voltage		36	V
Lead Temperature (Soldering, 10sec)		+260	,C
Operating Junction Temperature		+150	,C
Storage Temperature Range	-65	+150	,C
ESD HBM		±6000	V
ESD MM		±500	V

Recommended Operating Conditions

Parameter	Min	Max	Unit
Input Voltage	TS7805	25	V
Operating Junction Temperature Range	-40	+125	,C

- (1) Stresses beyond those listed under "Absolute Maximum Ratings" are not intended for normal operation. This is a stress rating only and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of this specification is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

ESD CAUTION



ESD (Electrostatic Discharge) sensitive device. Charged devices and circuit boards can discharge without detection. Although this product features patented or proprietary protection circuitry, damage may occur on devices subjects to high energy ESD. Therefore, proper ESD precautions should be taken to avoid performance degradation or loss of functionality.

ELECTRICAL CHARACTERISTICS

$V_{IN} = 10V$, $I_{OUT} = 1A$, $T_J = -40$ to $+125$ °C, unless otherwise noted ⁽²⁾.

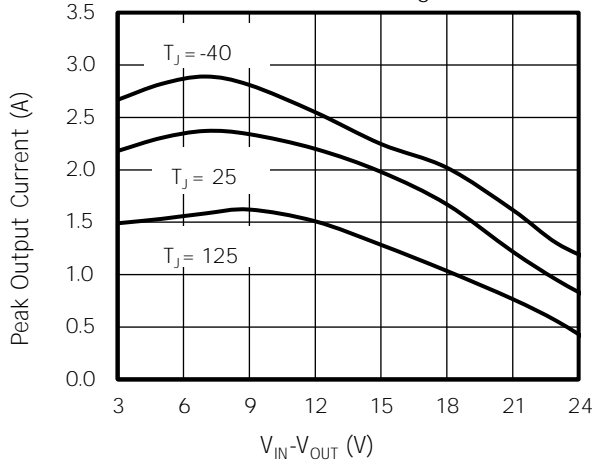
Parameter	Operating Conditions	Min	Typ	Max	Unit
V_{OUT} Output Voltage	$T_J = +25^{\circ}C$	4.9	5	5.1	V
	$I_{OUT} = 5mA$ to $1A$, $V_{IN} = 7.5V$ to $20V$, $P_D = 15W$	4.8		5.2	
V_{RLINE} Line Regulation	$V_{IN} = 7.5V$ to $20V$, $I_{OUT} = 500mA$, $T_J = +25^{\circ}C$		25	50	mV
V_{RLOAD} Load Regulation	$V_{IN} = 10V$, $I_{OUT} = 5mA$ to $1A$, $T_J = +25^{\circ}C$		20	50	mV
I_Q Quiescent Current	$V_{IN} = 10V$, $I_{OUT} = 0$		3.2	6	mA
I_Q Quiescent Current Change	$V_{IN} = 8V$ to $25V$, $I_{OUT} = 500mA$, $T_J = +25^{\circ}C$		0.3	0.8	mA
	$I_{OUT} = 5mA$ to $1A$, $T_J = +25^{\circ}C$		0.08	0.5	
PSRR Ripple Rejection	$V_{IN} = 8V$ to $18V$, $f = 1kHz$, $I_{OUT} = 500mA$		70		dB
V_{DROP} Dropout Voltage	$V_{OUT} = 1\%$, $I_{OUT} = 1A$, $T_J = +25^{\circ}C$		2		V
N_O Output Noise Voltage	$f = 10Hz$ to $100kHz$, $T_A = +25^{\circ}C$		8.5		μV_{O}
R_O Output Resistance	$f = 1kHz$		10		m
I_{SC} Short Circuit Current	$V_{IN} = 35V$, $T_A = +25^{\circ}C$		0.05		A
I_{PK} Peak Output Current	$V_{IN} = 10V$, $T_J = +25^{\circ}C$		2.2		A
$\frac{V_{OUT}}{T}$ Output Voltage Temperature Coefficient			0.4		mV/°C
	$(\frac{V_{OUT}}{V_{OUT}})/T$		80		ppm/°C

(2) Test time of each parameter is within 5ms. Pulse testing techniques are used to maintain the junction temperature as close to the ambient temperature as possible.

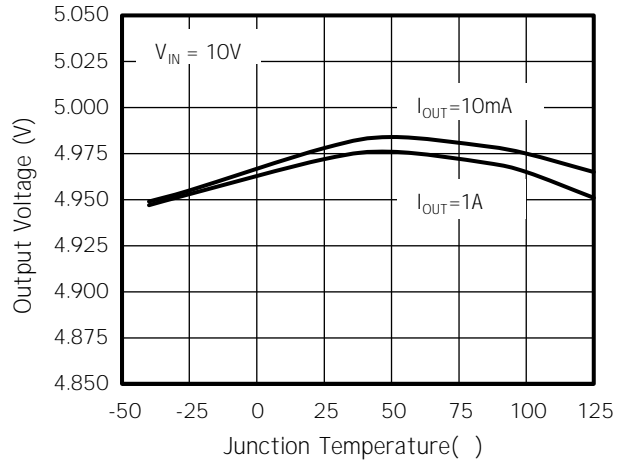
TYPICAL CHARACTERISTICS

$V_{IN} = 10V, I_{OUT} = 1A, T_J = -40 \text{ to } +125$, unless otherwise noted.

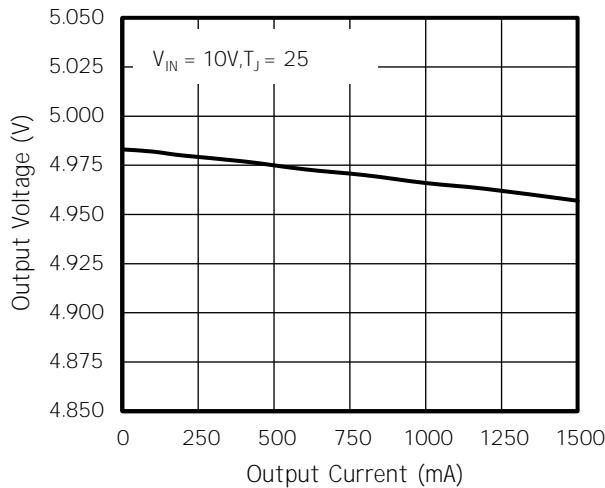
Peak Output Current vs Input/Output Differential Voltage



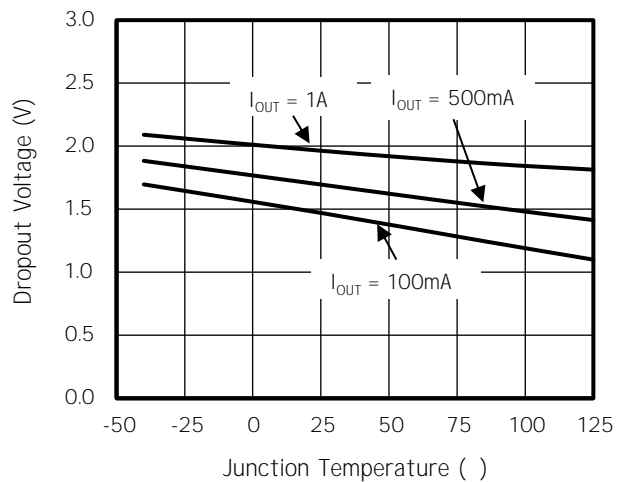
Output Voltage vs Junction Temperature



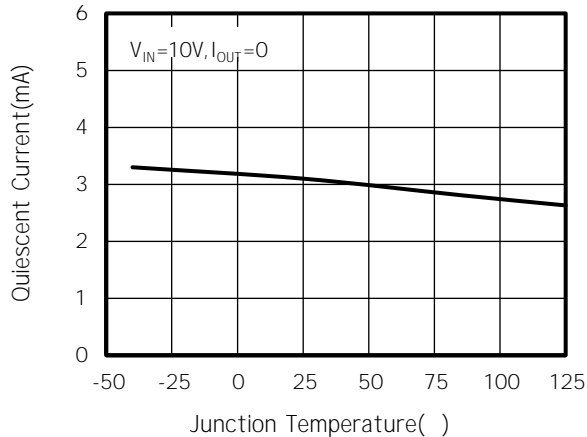
Output Voltage vs Output Current



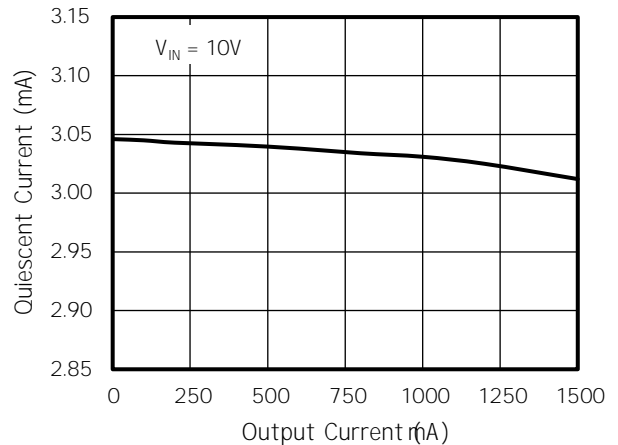
Dropout Voltage vs Junction Temperature



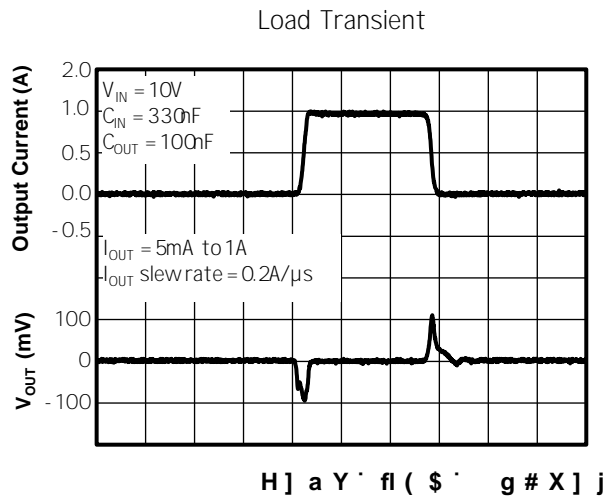
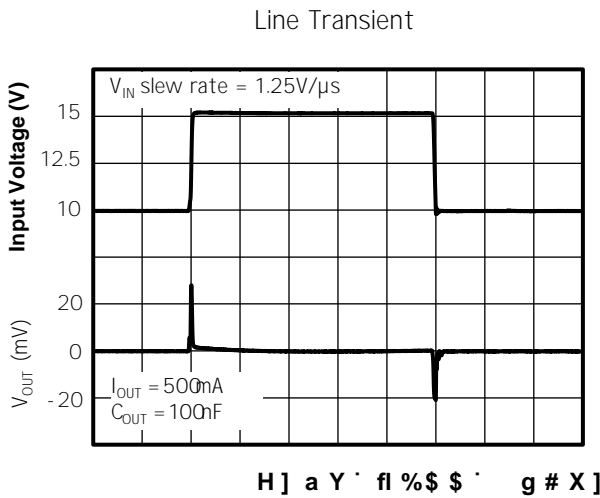
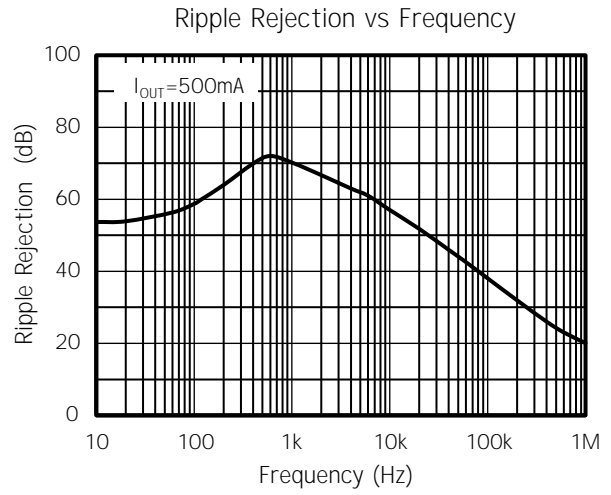
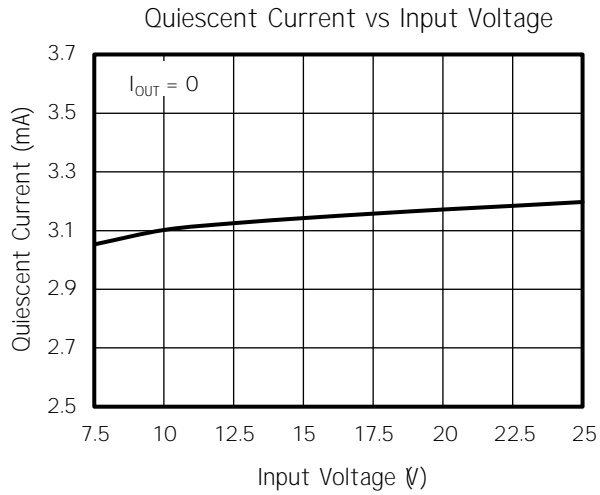
Quiescent Current vs Junction Temperature



Quiescent Current vs Output Current

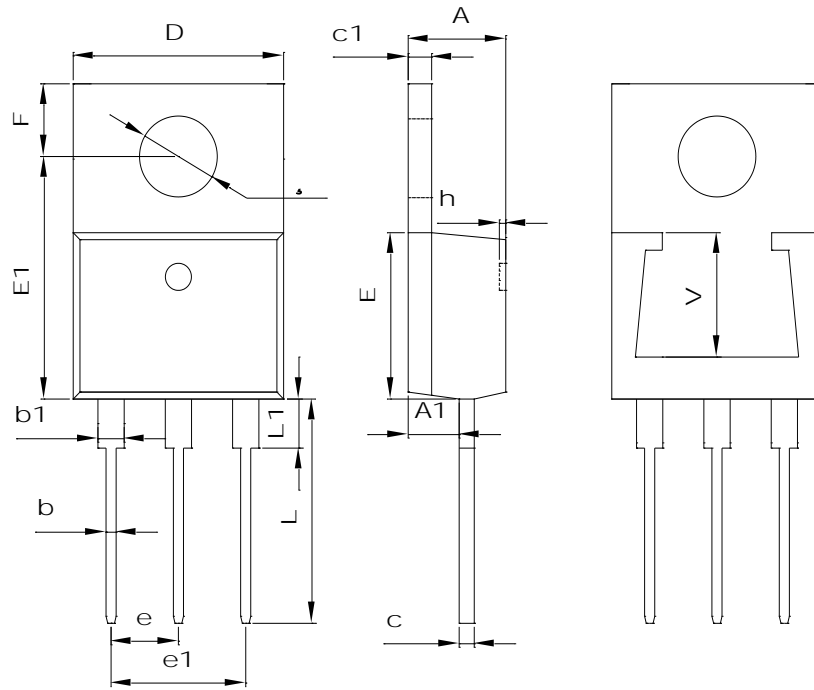


$V_{IN} = 10V$, $I_{OUT} = 1A$, $T_J = -40 \text{ to } +125$, unless otherwise noted.



MECHANICAL DIMENSIONS

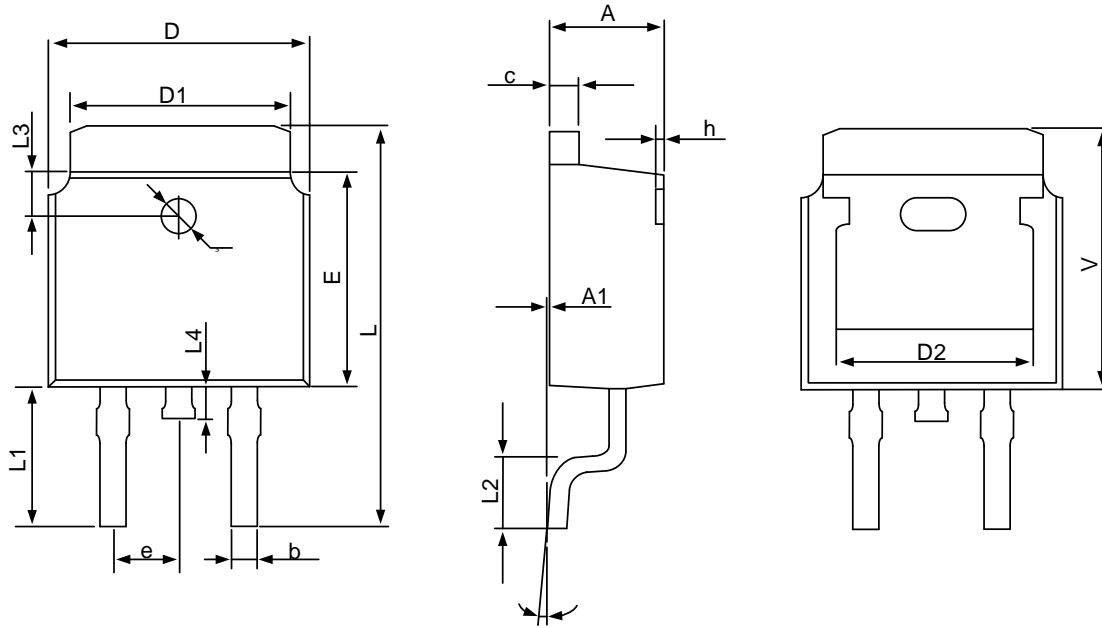
TO-220-3L PACKAGE MECHANICAL DRAWING



TO-220-3L D 5 7 ? 5 ; 9 ' A 9 7 < 3 B # 5 @'

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	2.520	2.820	0.099	0.111
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
c	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
E1	12.060	12.460	0.475	0.491
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
F	2.590	2.890	0.102	0.114
h	0.000	0.300	0.000	0.012
L	13.400	13.800	0.528	0.543
L1	3.560	3.960	0.140	0.156
V	5.600 REF		0.220 REF	
	3.735	3.935	0.147	0.155

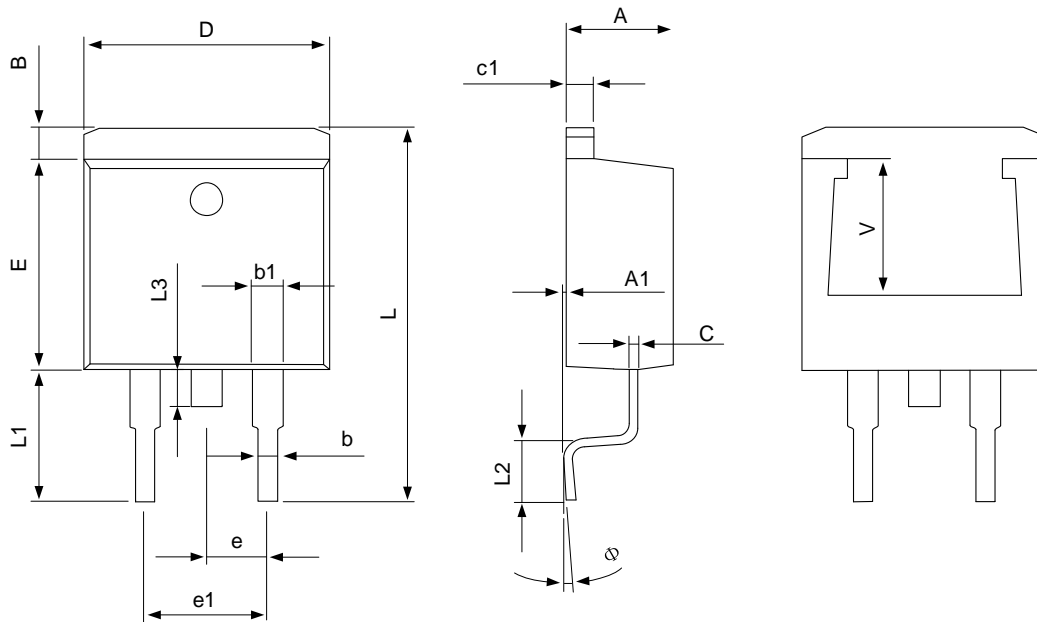
TO-252-2L PACKAGE MECHANICAL DRAWING



TO-252-2L D 5 7 ? 5 ; 9 A 9 7 < 3 5 # 1 5 @

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.400	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.635	0.770	0.025	0.030
c	0.460	0.580	0.018	0.023
D	6.500	6.700	0.256	0.264
D1	5.100	5.460	0.201	0.215
D2	4.830 REF		0.190 REF	
E	6.000	6.200	0.236	0.244
e	2.186	2.386	0.086	0.094
L	9.712	10.312	0.382	0.406
L1	2.900 REF		0.114 REF	
L2	1.400	1.700	0.055	0.067
L3	1.600 REF		0.063 REF	
L4	0.600	1.000	0.024	0.039
	1.100	1.300	0.043	0.051
Ä	0v	8v	0v	8v
h	0.000	0.300	0.000	0.012
V	5.250 REF		0.207 REF	

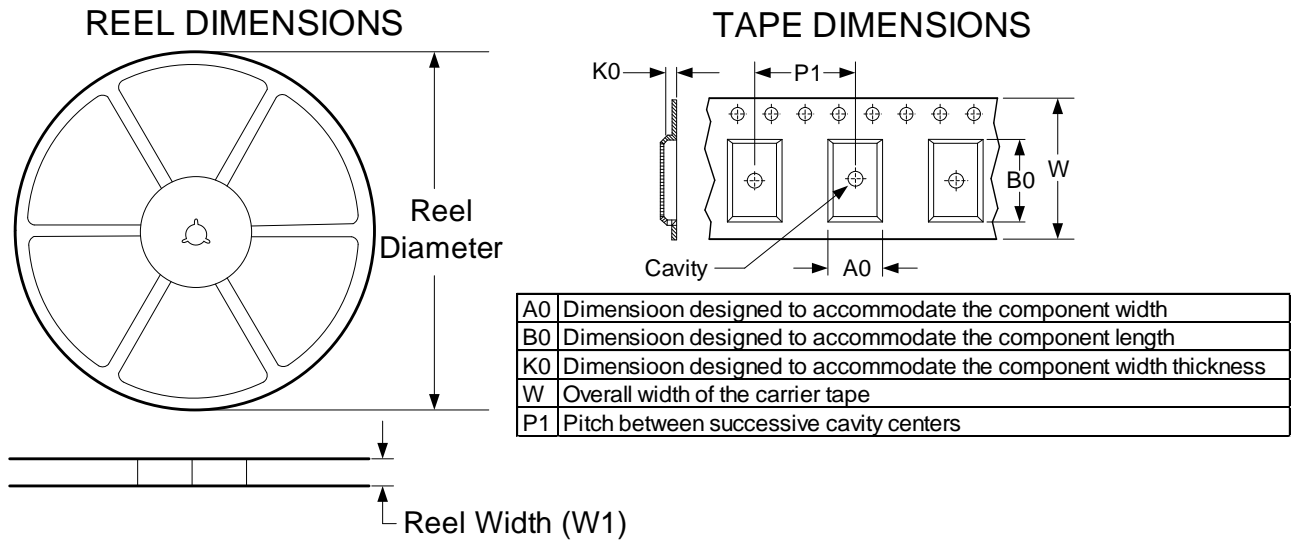
TO-263-2L PACKAGE MECHANICAL DRAWING



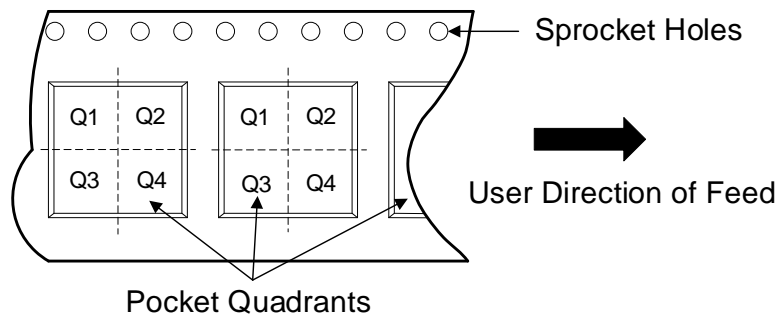
TO-263-2L D 5 7 ? 5 ; 9 ' A 9 7 < 3 B # 1 5 @

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	4.470	4.670	0.176	0.184
A1	0.000	0.150	0.000	0.006
B	1.120	1.420	0.044	0.056
b	0.710	0.910	0.028	0.036
b1	1.170	1.370	0.046	0.054
C	0.310	0.530	0.012	0.021
c1	1.170	1.370	0.046	0.054
D	10.010	10.310	0.394	0.406
E	8.500	8.900	0.335	0.350
e	2.540 TYP		0.100 TYP	
e1	4.980	5.180	0.196	0.204
L	14.940	15.500	0.588	0.610
L1	4.950	5.450	0.195	0.215
L2	2.340	2.740	0.092	0.108
L3	1.300	1.700	0.051	0.067
	0v	8v	0v	8v
V	5.600 REF		0.220 REF	

TAPE AND REEL INFORMATION



QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE



Device	Package Type	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
TS7805TO2632LR	TO-263-2L	4	800	330	24.4	10.8	16.13	5.21	16.00	24.00	Q2
TS7805TO2522LR	TO-252-2L	4	2500	330	18.7	6.90	10.50	2.50	8.00	16.00	Q2

REVISION HIETORY

NOTE: Page numbers for previous revisions may be different from that of the current version.

2022/09/08 REV KY1.0.0A to REV KY1.1.0A

Add TO-220-3L and TO-252-2L packages.....2,7,8,10

CONTACT INFORMATION

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