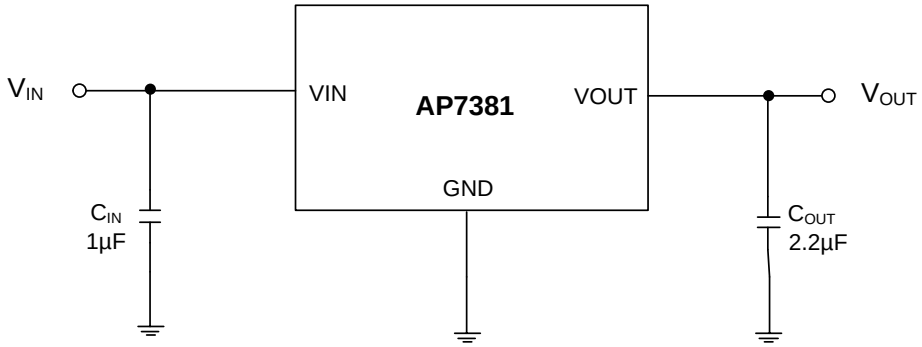
NEW PRODUCT

Typical Applications Circuit



Pin Descriptions

Pin Number			Pin Name	Function
TO92 (Ammo Packing)	SOT89	SOT23		
3	3	1	VIN	Input voltage
2	2	3	GND	Ground
1	1	2	VOUT	Regulated output voltage

Absolute Maximum Ratings (Note 4)

Symbol	Parameter	Rating		Unit
V_{IN}	Supply Input Voltage	-0.3 to 45		V
V_{OUT}	Output Voltage	-0.3 to 8		V
I_{OUT}	Output Current	150		mA
T_{LEAD}	Lead Temperature (Soldering, 10s)	+260		ºC
T_J	Operating Junction Temperature	+150		ºC
θ_{JA}	Thermal Resistance	SOT89	125	°C/W
		TO92 (Ammo Packing)	165	
		SOT23	167	
T_{STG}	Storage Temperature Range	-65 to +150		ºC
CDM	ESD (Change Device Model)	2000		V
HBM	ESD (Human Body Model)	4000		V

Note: 4. a). Stresses beyond those listed under *Absolute Maximum Ratings* can cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these conditions is not implied. Exposure to absolute-maximum-rated conditions for extended periods can affect device reliability.
b). Ratings apply to ambient temperature at +25°C. The JEDEC High-K board design used to derive this data is a 2inch × 2inch multi-layer board with 1oz internal power and ground planes and 2oz copper traces on the top and bottom of the board.

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
V_{IN}	Supply Input Voltage	3.3	40	V
T_J	Operating Junction Temperature	-40	+125	°C

NEW PRODUCT

Electrical Characteristics

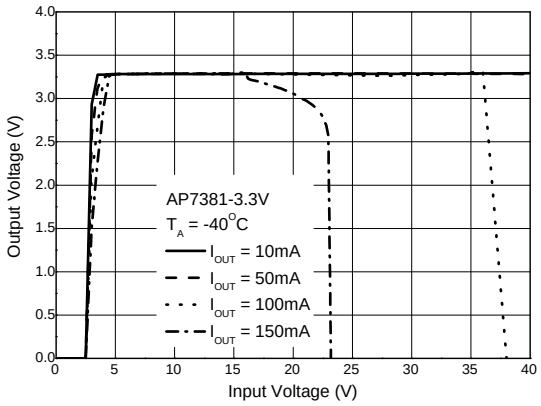
(T_J = +25°C, I_{OUT} = 1mA, C_{IN} = 1.0µF, C_{OUT} = 2.2µF, V_{IN} = V_{OUT} + 2V, **Bold** typeface applies over -40°C ≤ T_J ≤ +125°C, unless otherwise specified.)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
V_{OUT}	Output Voltage	Variation from Specified V_{OUT}	V_{OUT}x98%	—	V_{OUT}x102%	V
V_{IN}	Input Voltage	—	3.3	—	40	V
I_{LIMIT}	Current Limit	V_{OUT} = 98%xV_{OUT}, V_{IN} = V_{OUT} + 2V	150	—	—	mA
$\Delta V_{OUT}/\Delta V_{IN}$	Line Regulation	V_{OUT} + 2V ≤ V_{IN} ≤ 40V, I_{OUT} = 10mA	—	0.05	—	%/V
$\Delta V_{OUT}/V_{OUT}$	Load Regulation	1mA ≤ I_{OUT} ≤ 150mA	—	0.5	—	%
V_{DROP}	Dropout Voltage	I_{OUT} = 100mA @ V_{OUT} = 3.3V	—	1000	—	mV
I_{GND}	Ground Current	I_{OUT} = 0A	—	2.5	—	µA
		I_{OUT} = 100mA	—	25	—	
$\Delta V_{OUT}/(V_{OUT}x\Delta T)$	Output Voltage Temperature Coefficient	I_{OUT} = 100µA, -40°C ≤ T_J ≤ +125°C	—	**±100**	—	ppm/°C
T_{OTSD}	Thermal Shutdown Temperature	—	—	+160	—	°C
T_{HYOTSD}	Thermal Shutdown Hysteresis	—	—	+20	—	°C
PSRR	Power Supply Rejection Ratio	I_{OUT} = 1mA, V_{OUT} = 3.3V	—	60	—	dB

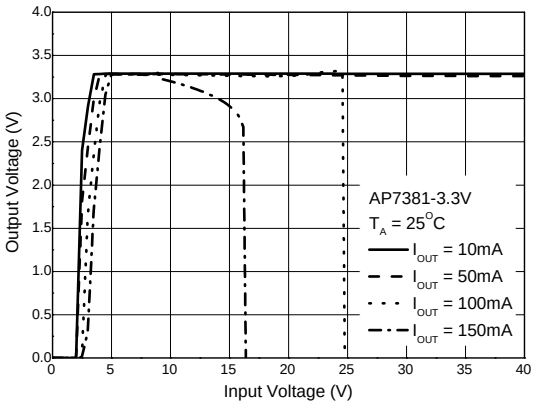
NEW PRODUCT

Performance Characteristics

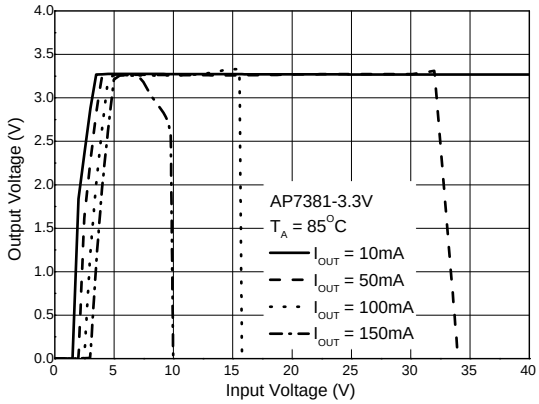
Output Voltage vs. Input Voltage @-40°C



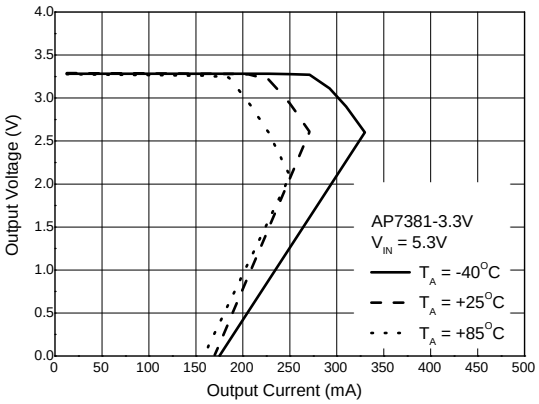
Output Voltage vs. Input Voltage @+25°C



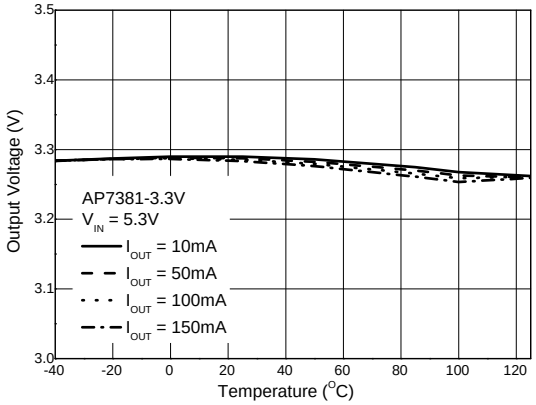
Output Voltage vs. Input Voltage @+85°C



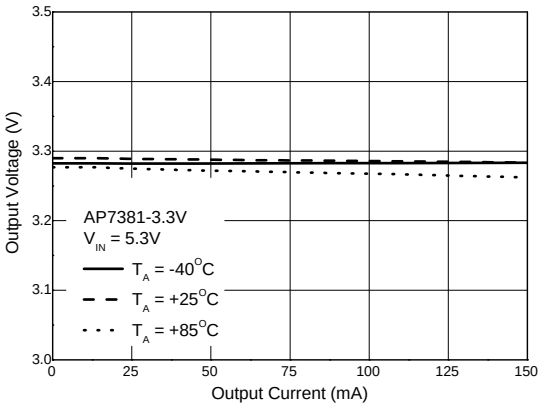
Output Voltage vs. Output Current



Output Voltage vs. Temperature



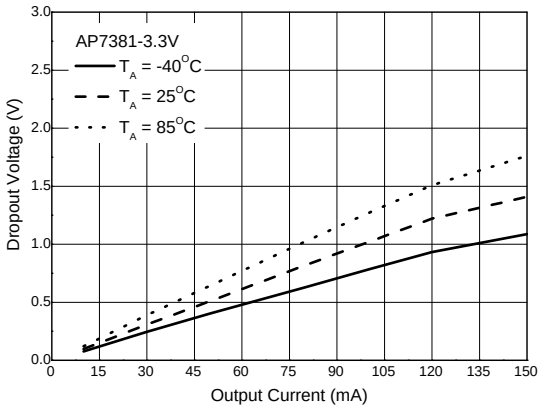
Output Voltage vs. Output Current



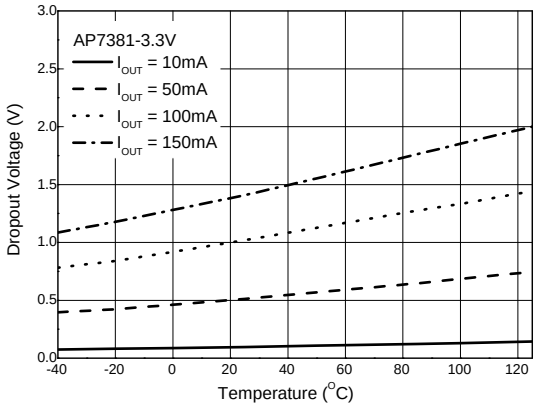
NEW PRODUCT

Performance Characteristics (continued)

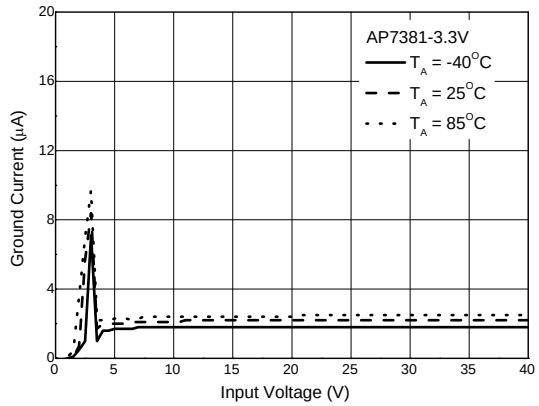
Dropout Voltage vs. Output Current



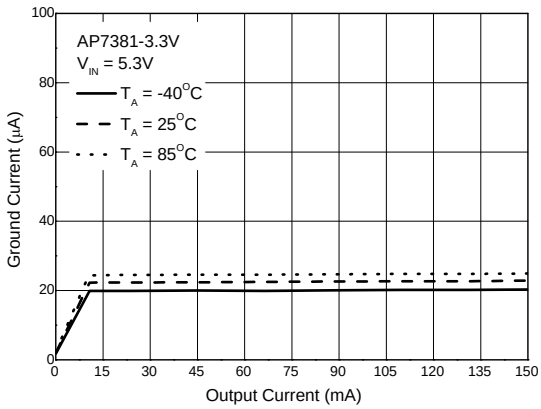
Dropout Voltage vs. Temperature



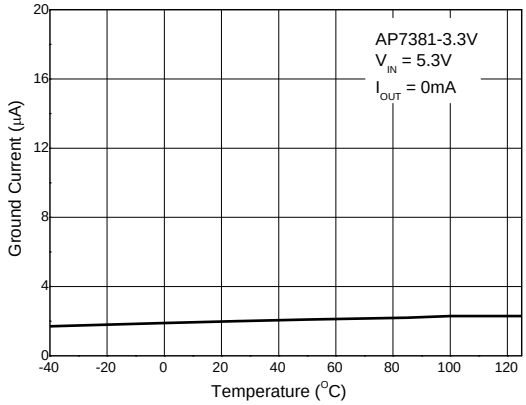
I_{GND} vs. Input Voltage



I_{GND} vs. Output Current

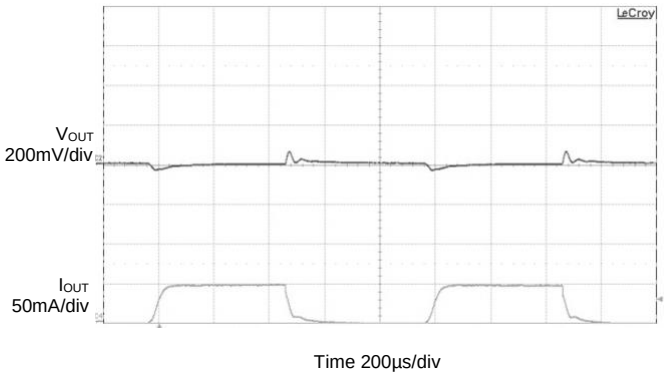


I_{GND} vs Temperature



Load Transient

C_{IN}=1µF, C_{OUT}=2.2µF, V_{IN}=V_{OUT}+2V, I_{OUT}=0 to 50mA



NEW PRODUCT

Ordering Information (Note 5)

AP7381 - XX XX - XX

Output Voltage	Package	Packing
28 : 2.8V 33 : 3.3V 50 : 5.0V 70 : 7.0V	V : TO92 (Ammo Packing) Y : SOT89 SA : SOT23	A : Ammo 13/7/TC: Tape & Reel

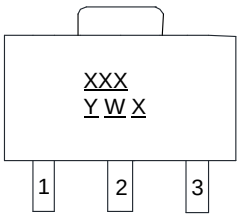
Part Number	Package Code	Packaging	Tape and Reel/Ammo	
			Quantity	Part Number Suffix
AP7381-28V-A	V	TO-92 (Ammo Packing)	2000/Ammo	-A
AP7381-33V-A	V	TO92 (Ammo Packing)	2000/Ammo	-A
AP7381-50V-A	V	TO92 (Ammo Packing)	2000/Ammo	-A
AP7381-70V-A	V	TO92 (Ammo Packing)	2000/Ammo	-A
AP7381-28Y-13	Y	SOT89	2500/Tape & Reel	-13
AP7381-33Y-13	Y	SOT89	2500/Tape & Reel	-13
AP7381-50Y-13	Y	SOT89	2500/Tape & Reel	-13
AP7381-70Y-13	Y	SOT89	2500/Tape & Reel	-13
AP7381-33Y-TC	Y	SOT89	4000/Tape & Reel	-TC
AP7381-28SA-7	SA	SOT23	3000/Tape & Reel	-7
AP7381-33SA-7	SA	SOT23	3000/Tape & Reel	-7
AP7381-50SA-7	SA	SOT23	3000/Tape & Reel	-7
AP7381-70SA-7	SA	SOT23	3000/Tape & Reel	-7

Note: 5. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information

(1) SOT89

(Top View)



XXX : Identification Code
Y : Year : 0 ~ 9
W : Week : A ~ Z : 1 ~ 26 Week;
a ~ z : 27 ~ 52 Week;
z Represents 52 and 53 Week
X : Internal Code

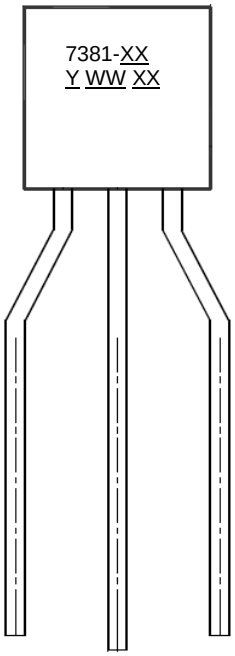
Part Number	Package	Identification Code
AP7381-28Y-13	SOT89	D9C
AP7381-33Y-13	SOT89	D9A
AP7381-50Y-13	SOT89	D9B
AP7381-70Y-13	SOT89	D9D
AP7381-33Y-TC	SOT89	D9A

NEW PRODUCT

Marking Information (continued)

(2) TO92 (Ammo Packing)

(Front View)

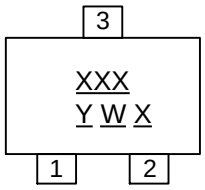


7381-XX : Identification Code
Y : Year : 0 ~ 9
WW : Week : 01 ~ 52; 52
Represents 52 and 53 Week
XX : Internal Code

Part Number	Package	Identification Code
AP7381-28V-A	TO92 (Ammo Packing)	7381-28
AP7381-33V-A	TO92 (Ammo Packing)	7381-33
AP7381-50V-A	TO92 (Ammo Packing)	7381-50
AP7381-70V-A	TO92 (Ammo Packing)	7381-70

(3) SOT23

(Top View)



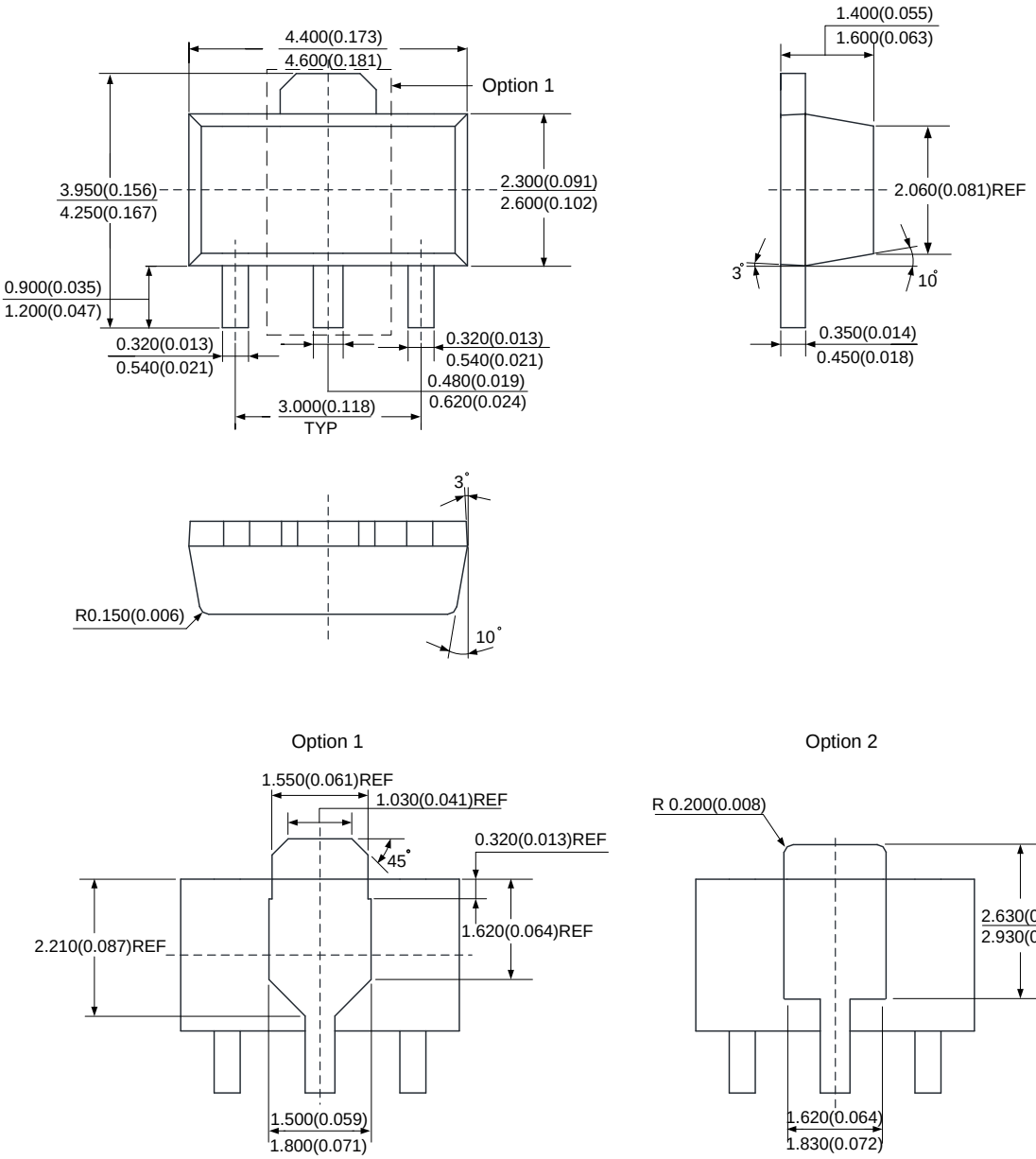
XXX : Identification Code
Y : Year 0 to 9
W : Week : A to Z : 1 to 26 week;
a to z : 27 to 52 week; z represents
52 and 53 week
X : Internal Code

Part Number	Package	Identification Code
AP7381-28SA-7	SOT23	D9C
AP7381-33SA-7	SOT23	D9A
AP7381-50SA-7	SOT23	D9B
AP7381-70SA-7	SOT23	D9D

NEW PRODUCT

Package Outline Dimensions (All dimensions in mm.)

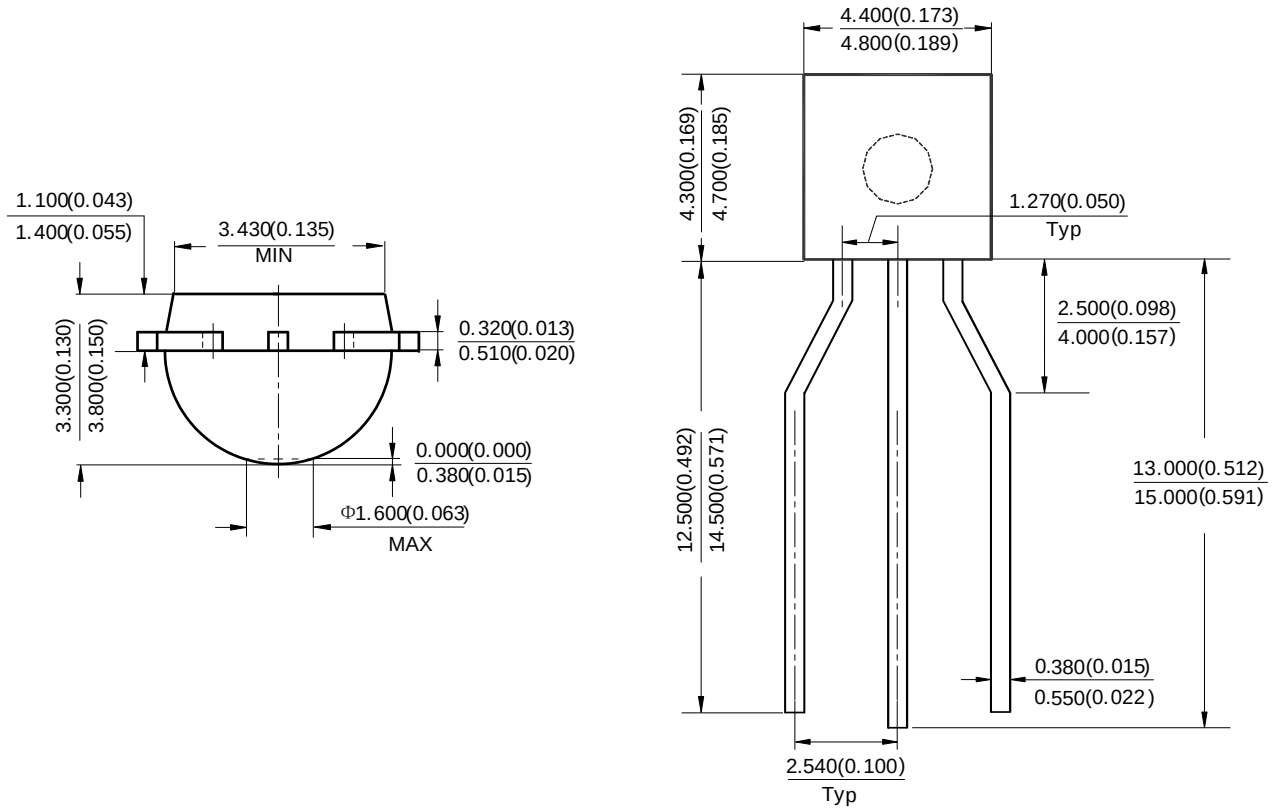
(1) Package Type: SOT89



NEW PRODUCT

Package Outline Dimensions (All dimensions in mm.) (continued)

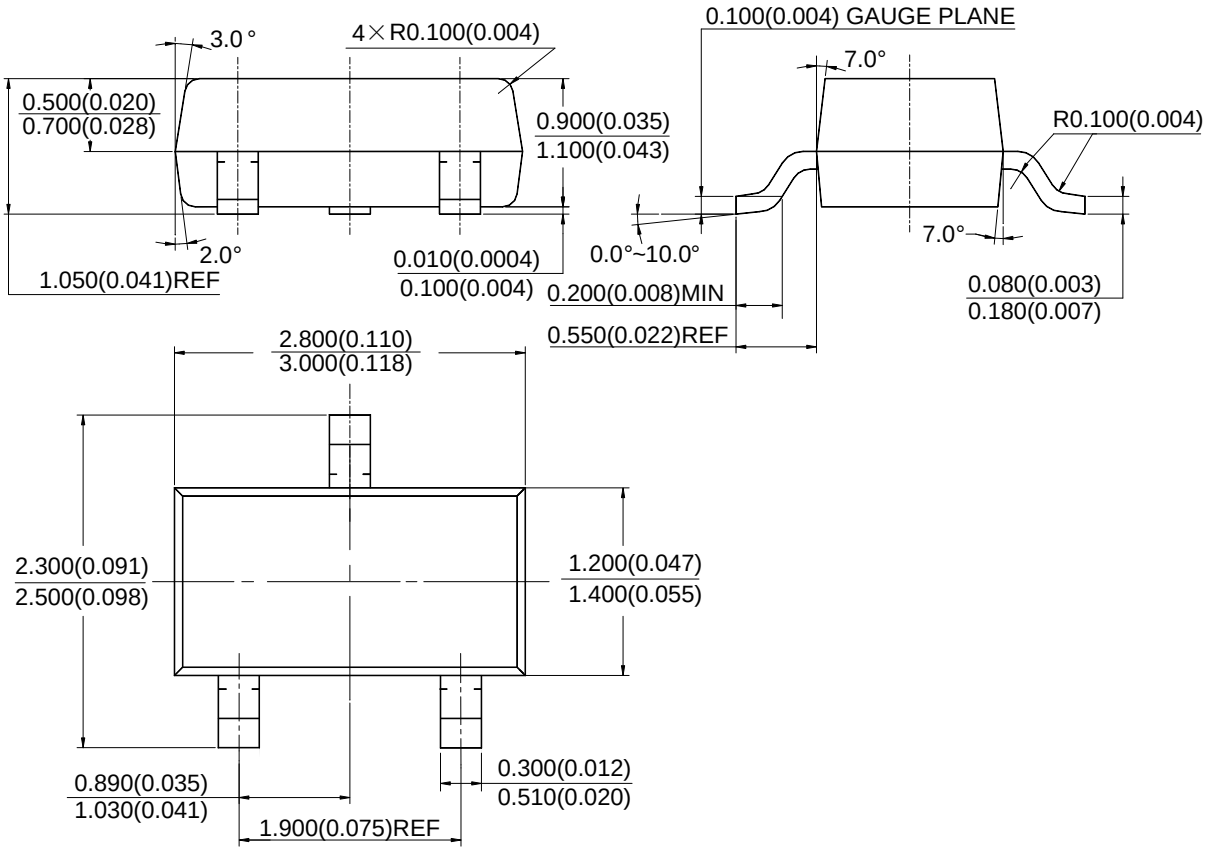
(2) Package Type: TO92 (Ammo Packing)



NEW PRODUCT

Package Outline Dimensions (All dimensions in mm.) (continued)

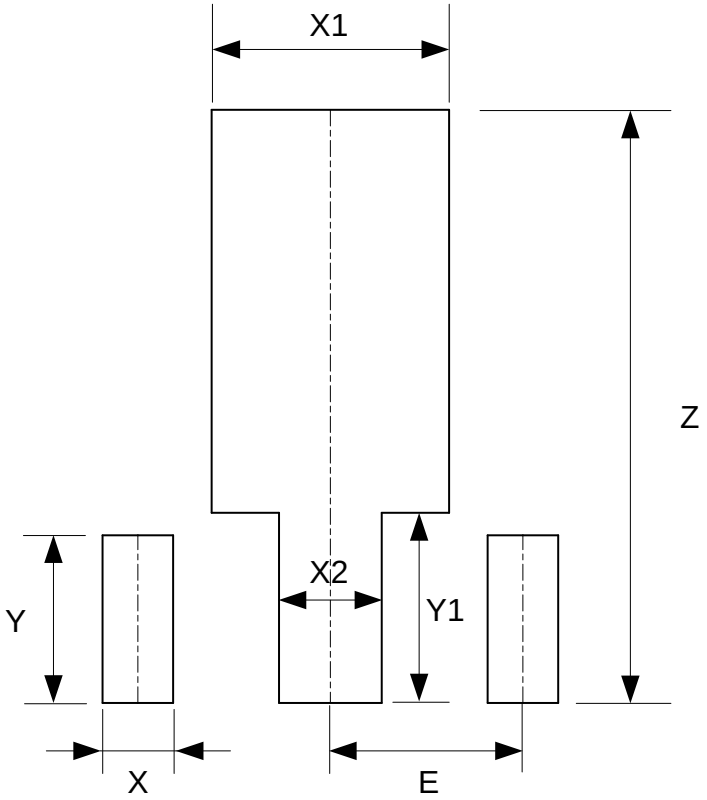
(3) Package Type: SOT23



NEW PRODUCT

Suggested Pad Layout

(1) Package Type: SOT89

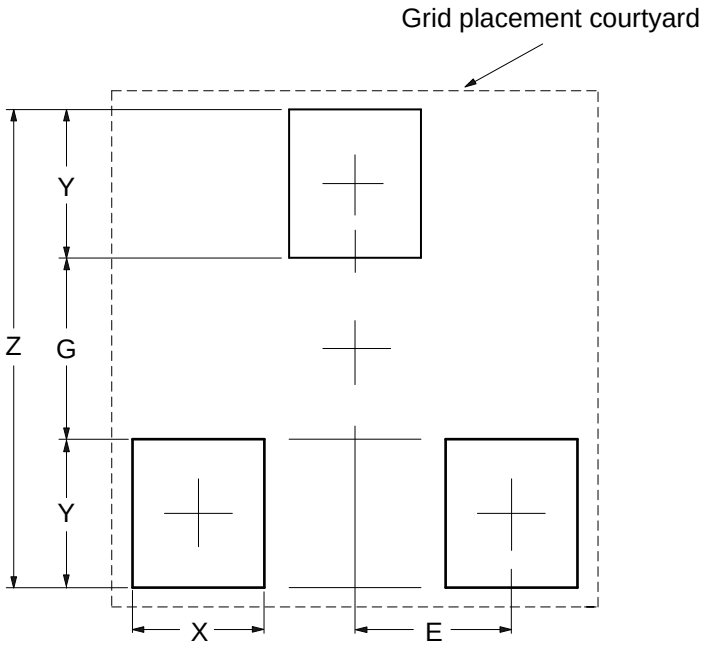


Dimensions	Z (mm)/(inch)	X (mm)/(inch)	X1 (mm)/(inch)	X2 (mm)/(inch)	Y (mm)/(inch)	Y1 (mm)/(inch)	E (mm)/(inch)
Value	4.600/0.181	0.550/0.022	1.850/0.073	0.800/0.031	1.300/0.051	1.475/0.058	1.500/0.059

NEW PRODUCT

Suggested Pad Layout (continued)

(2) Package Type: SOT23



Dimensions	Z (mm)/(inch)	G (mm)/(inch)	X (mm)/(inch)	Y (mm)/(inch)	E (mm)/(inch)
Value	2.900/0.114	1.100/0.043	0.800/0.031	0.900/0.035	0.950/0.037

NEW PRODUCT

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