IRU1010-33

1A LOW DROPOUT POSITIVE FIXED 3.3V REGULATOR

FEATURES

- Guaranteed < 1.3V Dropout at Full Load Current
- Fast Transient Response
- 1% Output Voltage Initial Accuracy
- Built-In Thermal Shutdown
- Available in SOT-223, D-Pak, Ultra Thin-Pak™ and 8-Pin SOIC Surface-Mount Packages

APPLICATIONS

- VGA & Sound Card Applications
- Standard 3.3V Chip Set and Logic Applications

DESCRIPTION

The IRU1010-33 is a low dropout three-terminal fixed output regulator with minimum of 1A output current capability. This product is specifically designed to provide well regulated supply for low voltage IC applications such as VGA, sound & DVD cards. The IRU1010-33 is guaranteed to have <1.3V dropout at full load current making it ideal to provide well regulated with 4.75V to 7V input supply. The IRU1010-33 is specifically designed to be stable with low cost aluminum capacitors while maintaining stability with low ESR tantalum caps.

TYPICAL APPLICATION

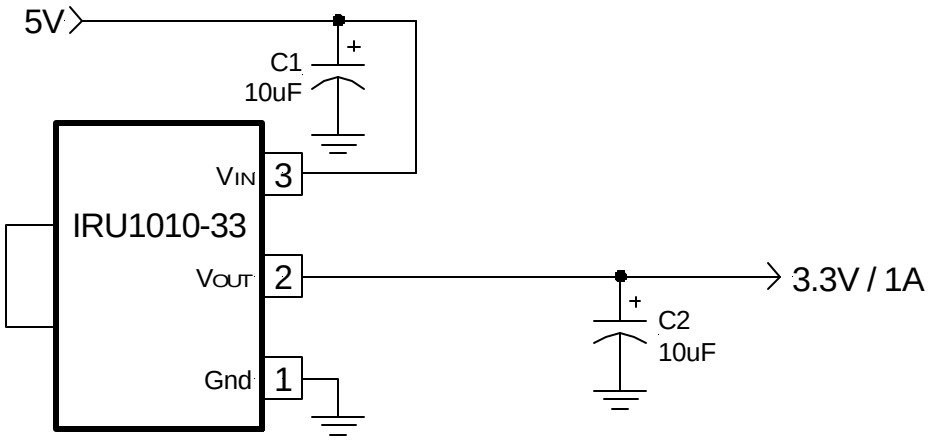


Figure 1 - Typical application of IRU1010-33 in a 5V to 3.3V regulator.

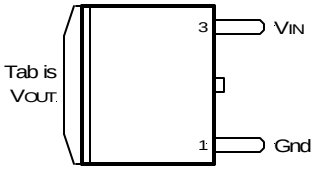
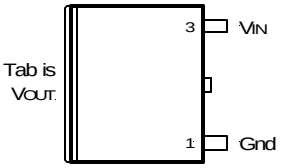
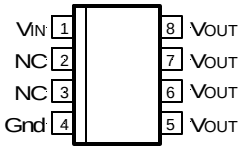
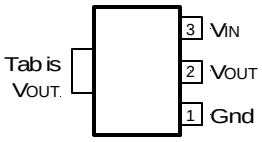
PACKAGE ORDER INFORMATION

T_J (°C)	2-PIN PLASTIC TO-252 (D-Pak)	2-PIN PLASTIC Ultra Thin-Pak™ (P)	8-PIN PLASTIC SOIC (S)	3-PIN PLASTIC SOT-223 (Y)
0 To 150	IRU1010-33CD	IRU1010-33CP	IRU1010-33CS	IRU1010-33CY

ABSOLUTE MAXIMUM RATINGS

Input Voltage (V_{IN}) 7V
Power Dissipation ..... Internally Limited
Storage Temperature Range ..... -65°C To 150°C
Operating Junction Temperature Range ..... 0°C To 150°C

PACKAGE INFORMATION

2-PIN PLASTIC TO-252 (D-Pak)	2-PIN ULTRA THIN-PAK™ (P)	8-PIN PLASTIC SOIC (S)	3-PIN PLASTIC SOT-223 (Y)
			
θ_{JA}=70°C/W for 0.5" Sq pad	θ_{JA}=70°C/W for 0.5" Sq pad	θ_{JA}=55°C/W for 1" Sq pad	θ_{JA}=90°C/W for 0.4" Sq pad

ELECTRICAL SPECIFICATIONS

Unless otherwise specified, these specifications apply over C_{IN}=1µF, V_{IN}=5V, C_{OUT}=10µF, and T_J=0 to 125°C. Typical values refer to T_J=25°C.

PARAMETER	SYM	TEST CONDITION	MIN	TYP	MAX	UNITS
Output Voltage	Vo	Io=10mA, T_J=25°C	3.267	3.300	3.333	V
		Io=10mA	3.235	3.300	3.365	
Line Regulation		Io=10mA, 4.75V<V_{IN}<7V			7	mV
Load Regulation (Note 1)		10mA<Io<1A			17	mV
Dropout Voltage (Note 2)		Io=1A			1.3	V
Current Limit		ΔVo=100mV	1.1			A
Thermal Regulation		30ms Pulse, Io=1A		0.01	0.02	%/W
Ripple Rejection		f=120Hz, Co=25µF Tantalum,				
		Io=0.5A	60	70		dB
Temperature Stability		Io=10mA		0.5		%
Long Term Stability		T_J=125°C, 1000Hrs		0.3	1	%
RMS Output Noise		T_J=25°C, 10Hz<f<10KHz		0.003		%Vo

Note 1: Low duty cycle pulse testing with Kelvin connections is required in order to maintain accurate data.

Note 2: Dropout voltage is defined as the minimum differential voltage between V_{IN} and V_{OUT} required to maintain regulation at V_{OUT}. It is measured when the output voltage drops 1% below its nominal value.

PIN DESCRIPTIONS

PIN#	PIN SYMBOL	PIN DESCRIPTION
1	Gnd	Ground pin. This pin must be connected to ground plane using a low inductance short connection.
2	V_{OUT}	The output of the regulator. This pin is also connected to the tab of the package. An output capacitor must be connected to this pin to insure stability of the regulator.
3	V_{IN}	Input pin of the regulator.

BLOCK DIAGRAM

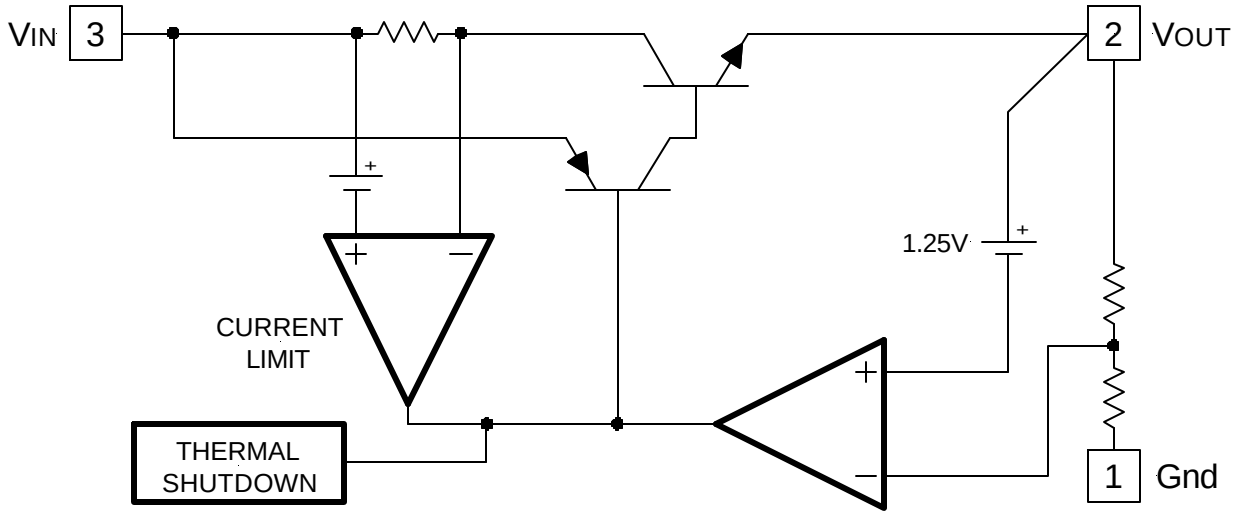
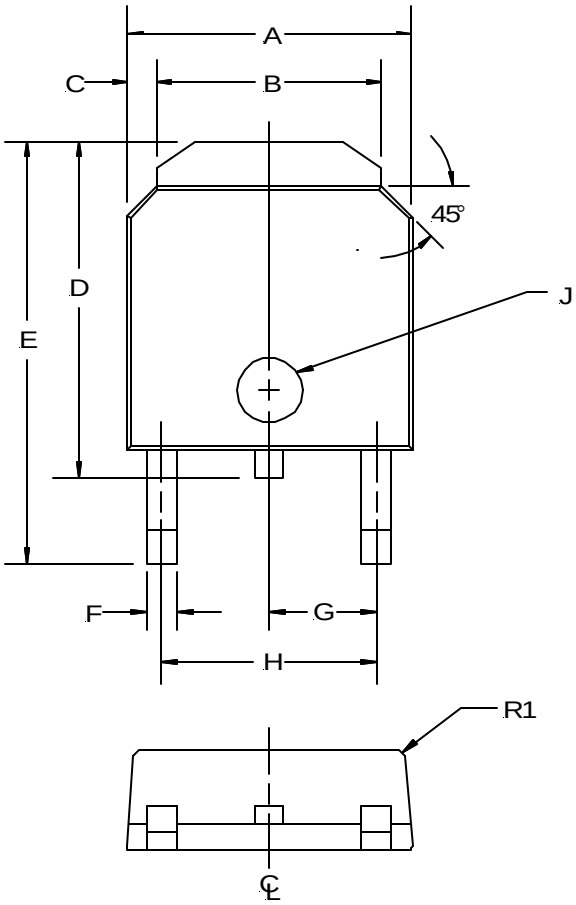
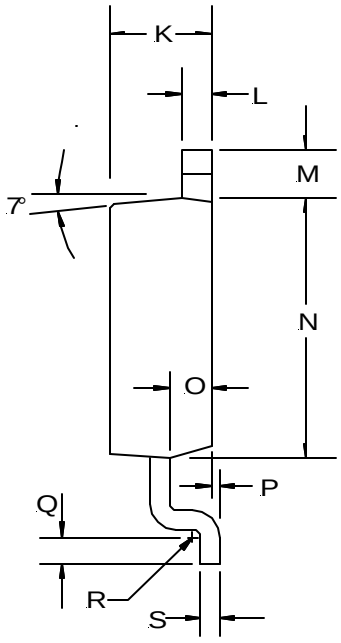


Figure 2 - Simplified block diagram of the IRU1010-33.

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(D) TO-252 Package
2-Pin

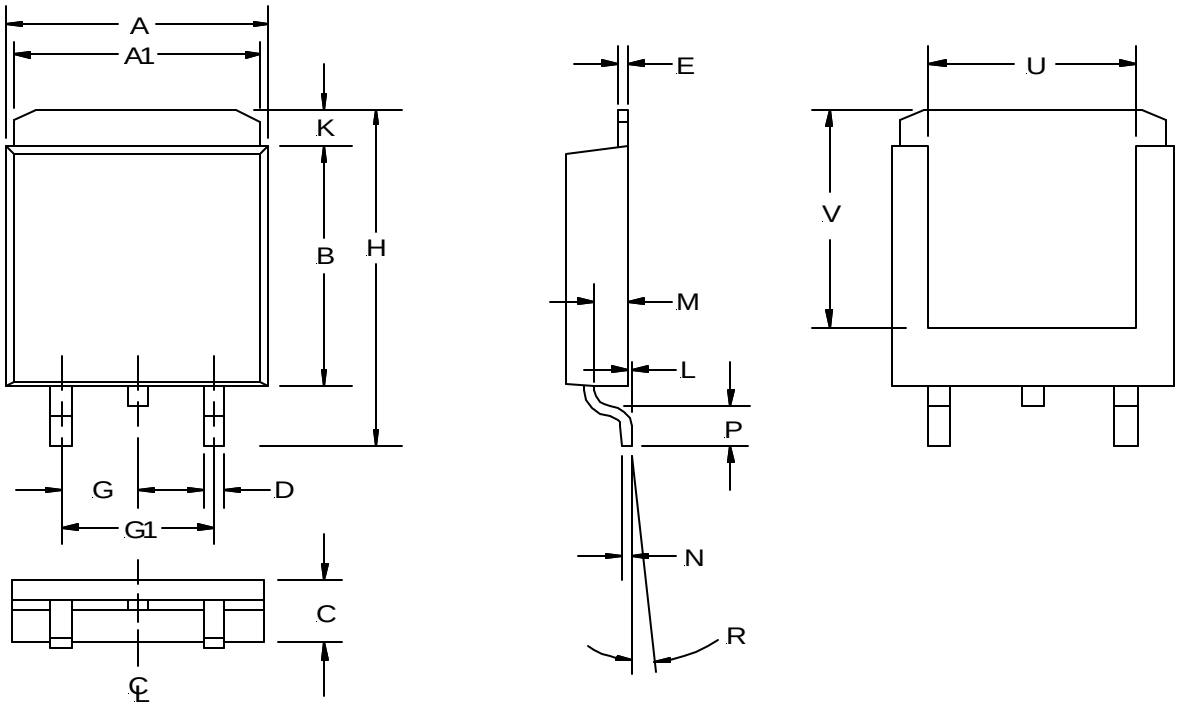




SYMBOL	MIN	MAX
A	6.477	6.731
B	5.004	5.207
C	0.686	0.838
D	7.417	8.179
E	9.703	10.084
F	0.635	0.889
G	2.286 BSC	
H	4.521	4.623
J	∅1.52	∅1.62
K	2.184	2.388
L	0.762	0.864
M	1.016	1.118
N	5.969	6.223
O	1.016	1.118
P	0	0.102
Q	0.534	0.686
R	R0.31 TYP	
R1	R0.51 TYP	
S	0.428	0.588

NOTE: ALL MEASUREMENTS ARE IN MILLIMETERS.

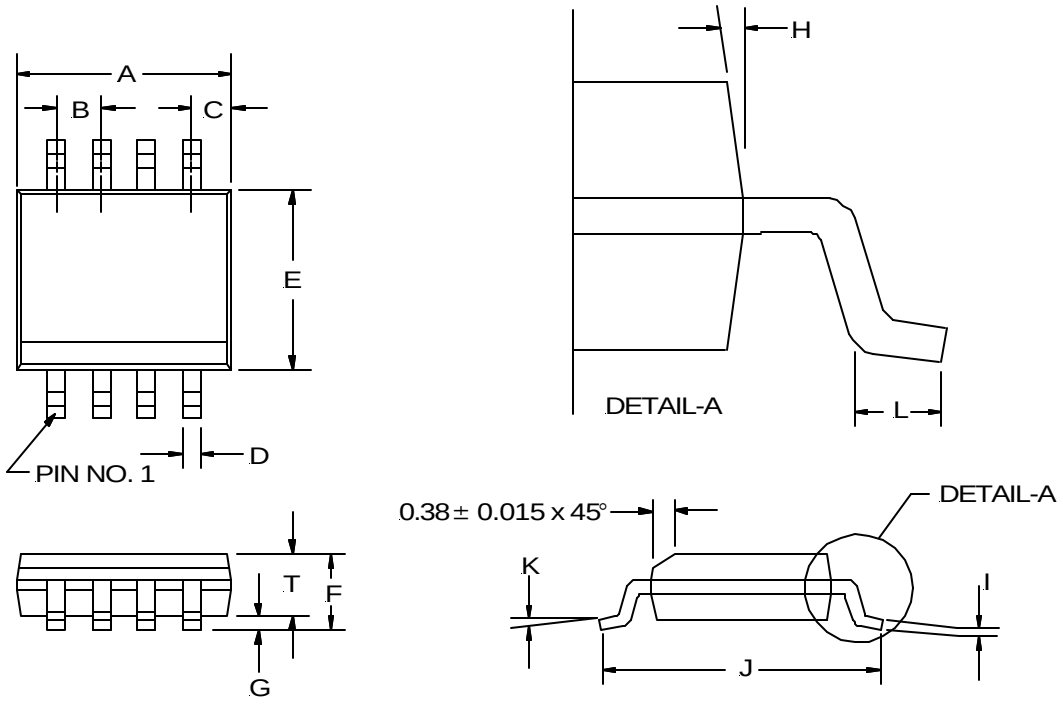
(P) Ultra Thin-Pak™
2-Pin



SYMBOL	MIN	MAX
A	5.91	6.17
A1	5.54	5.79
B	6.02	6.27
C	1.70	2.03
D	0.63	0.79
E	0.17	0.33
G	2.16	2.41
G1	4.45	4.70
H	9.42	9.68
K	0.76	1.27
L	0.02	0.13
M	0.89	1.14
N	0.25	0.25
P	0.94	1.19
R	2°	6°
U	2.92	3.30
V	5.08 NOM	

NOTE: ALL MEASUREMENTS
ARE IN MILLIMETERS.

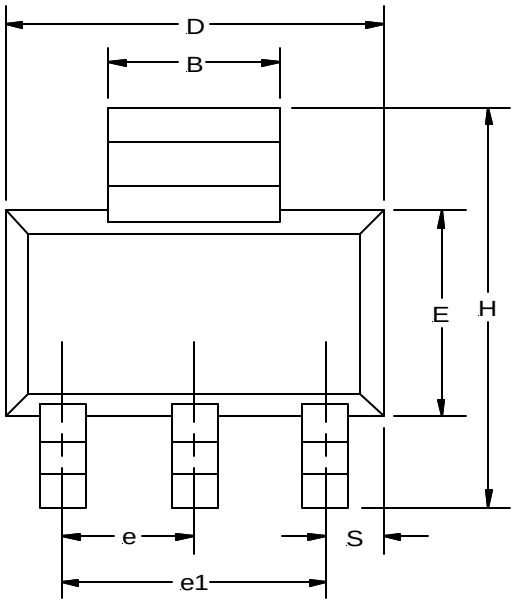
(S) SOIC Package
8-Pin Surface Mount, Narrow Body



8-PIN		
SYMBOL	**MIN**	**MAX**
A	4.80	4.98
B	1.27 BSC	
C	0.53 REF	
D	0.36	0.46
E	3.81	3.99
F	1.52	1.72
G	0.10	0.25
H	7° BSC	
I	0.19	0.25
J	5.80	6.20
K	0°	8°
L	0.41	1.27
T	1.37	1.57

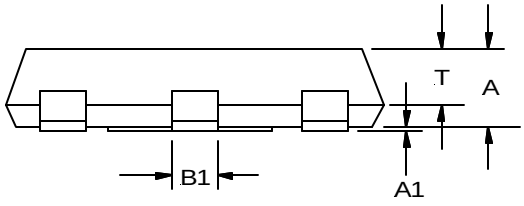
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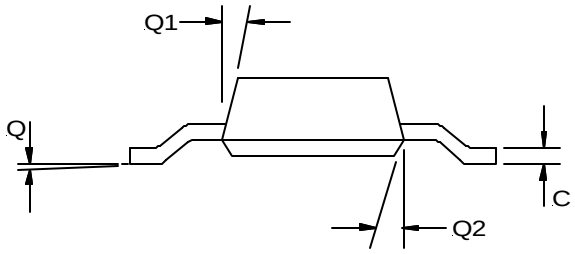
(Y) SOT-223 Package
3-Pin



SYMBOL	MIN	MAX
A	1.498	1.702
A1	0.02	0.11
B	2.895	3.15
B1	0.637	0.85
C	0.239	0.381
D	6.299	6.706
E	3.30	3.708
e	2.209	2.953
e1	4.496	4.699
H	6.70	7.30
Q	0°	10°
Q1	7°	16°
Q2	7°	16°
S	0.838	1.05
T	1.092	1.30

NOTE: ALL MEASUREMENTS ARE IN MILLIMETERS.





PACKAGE SHIPMENT METHOD

PKG DESIG	PACKAGE DESCRIPTION	PIN COUNT	PARTS PER TUBE	PARTS PER REEL	T & R Orientation
D	TO-252, (D-Pak)	2	75	2500	Fig A
P	Ultra Thin-Pak™	2	75	2500	Fig B
S	SOIC, Narrow Body	8	95	2500	Fig C
Y	SOT-223	3	80	2500	Fig D

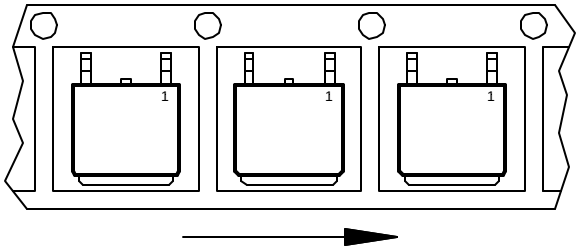


Figure A

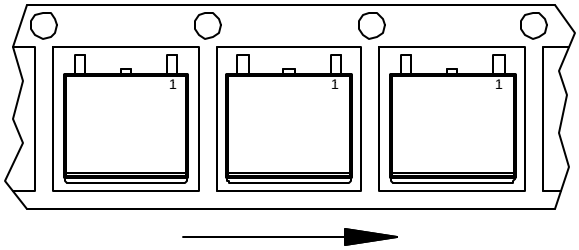


Figure B

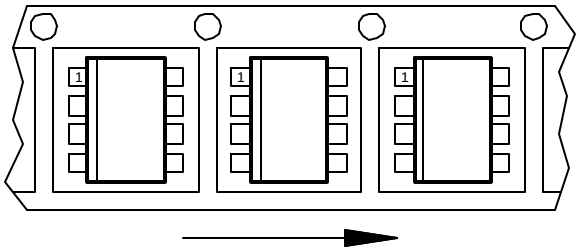


Figure C

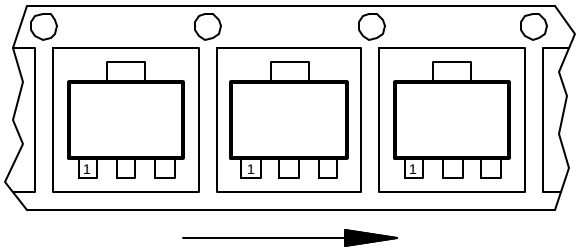


Figure D

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