

BUV27

NPN Silicon Power Transistor

This device is designed for use in switching regulators and motor control.

Features

- Low Collection Emitter Saturation Voltage
- Fast Switching Speed
- Pb-Free Package is Available*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Sustaining Voltage	V_{CEO}	120	Vdc
Collector-Emitter Breakdown Voltage	V_{CBO}	240	Vdc
Emitter-Base Voltage	V_{EBO}	7.0	Vdc
Collector Current – Continuous – Peak (Note 1)	I_C I_{CM}	12 20	Adc
Base Current	I_B	4.0	Adc
Total Device Dissipation ($T_C = 25^\circ\text{C}$) Derate above 25°C	P_D	70 0.56	W W/ $^\circ\text{C}$
Operating and Storage Temperature	T_J, T_{stg}	– 65 to 150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Rating	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case Junction-to-Ambient	$R_{\theta JC}$ $R_{\theta JA}$	1.78 62.5	$^\circ\text{C}/\text{W}$

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

1. Pulse Test: Pulse Width = 5.0 ms, Duty Cycle $\leq 10\%$.

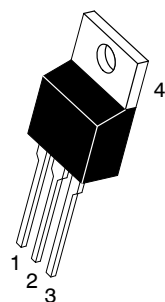


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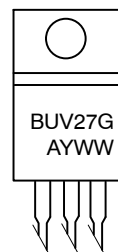
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POWER TRANSISTOR
12 AMPERES
120 VOLTS
70 WATTS

MARKING DIAGRAM



TO-220AB
CASE 221A
STYLE 1



BUV27 = Device Code
A = Assembly Location
Y = Year
WW = Work Week
G = Pb-Free Package

ORDERING INFORMATION

Device	Package	Shipping
BUV27	TO-220AB	50 per Rail
BUV27G	TO-220AB (Pb-Free)	50 per Rail

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

BUV27

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

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
I _{CER}	Collector Cut-off Current (R _{BE} = 50 Ω)	V _{CE} = 240 V, T _C = 125°C			3.0	mA
I _{CEX}	Collector Cut-off Current	V _{CE} = 240 V, V _{BE} = -1.5 V, T _C = 125°C			1.0	mA
I _{EBO}	Emitter Cut-off Current (I _C = 0)	V _{BE} = 5 V			1.0	mA
V _{CEO(sus)}	Collector-Emitter Sustaining Voltage	I _C = 0.2 A, L = 25 mH	120			V
V _{EBO}	Emitter-Base Voltage (I _C = 0)	I _E = 50 mA	7.0		30	V
V _{CE(sat)} (Note 2)	Collector-Emitter Saturation Voltage	I _C = 4 A, I _B = 0.4 A I _C = 8 A, I _B = 0.8 A			0.7 1.5	V
V _{BE(sat)} (Note 2)	Base-Emitter Saturation Voltage	I _C = 8 A, I _B = 0.8 A			2.0	V

Resistive Load

t _{on}	Turn-on Time	V _{CC} = 90 V, I _C = 8 A		0.4	0.8	ms
t _s	Storage Time	V _{BE} = -6 V, I _{B1} = 0.8 A		0.5	1.2	μs
t _f	Fall Time	R _{BB} = 3.75 Ω		0.12	0.25	μs

Inductive Load

t _s	Storage Time	V _{CC} = 90 V, I _C = 8 A		0.6		μs
t _f	Fall Time	I _{B1} = 0.8 A, V _{BE} = -5 V L _B = 1 μH		0.04		
t _s	Storage Time	V _{CC} = 90 V, I _C = 8 A			2.0	
t _f	Fall Time	I _{B1} = 0.8 A, V _{BE} = -5 V L _B = 1 μH, T _J = 125°C			0.15	

2. Pulsed: Pulse Duration = 300 μs, Duty Cycle = 2%

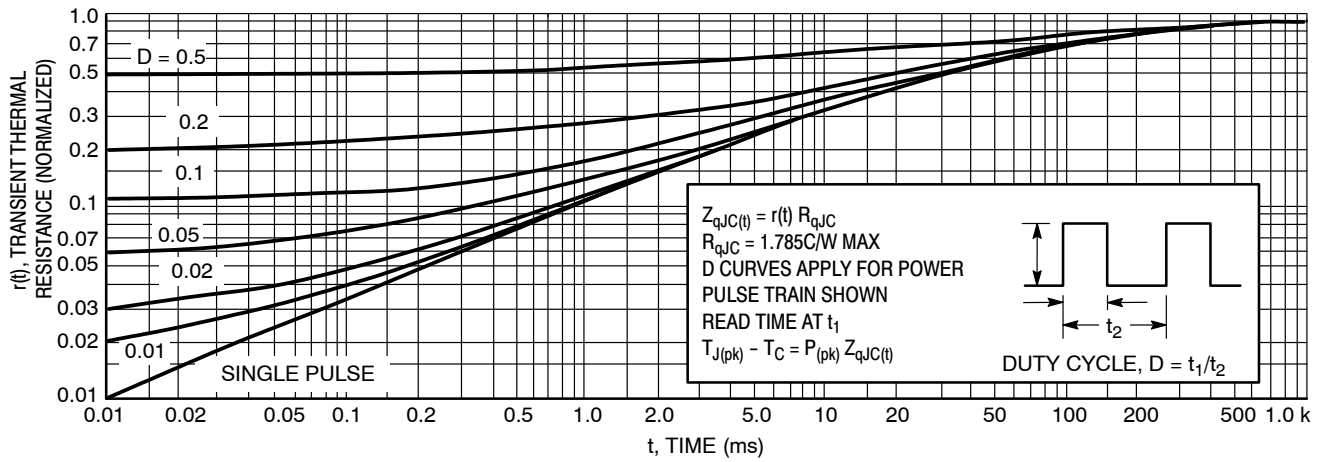


Figure 1. Thermal Response

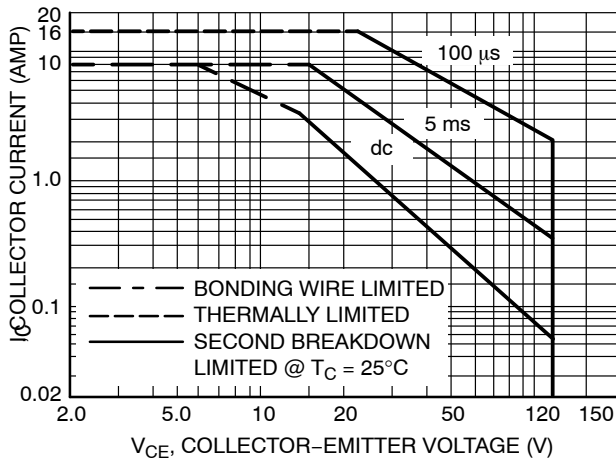


Figure 2. Forward Bias Safe Operating Area

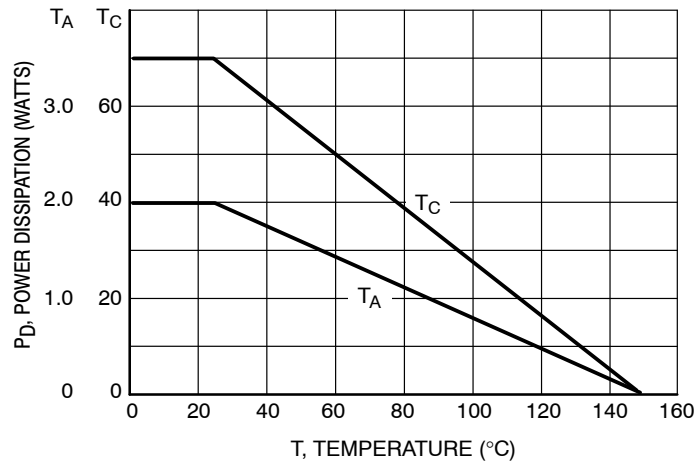
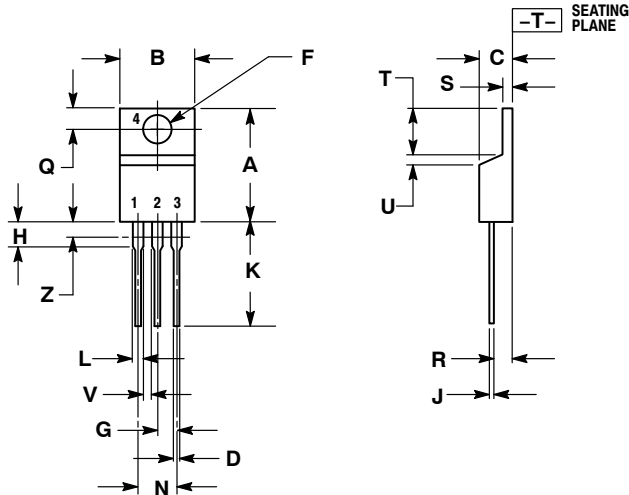


Figure 3. Power Derating

BUV27

PACKAGE DIMENSIONS

TO-220 CASE 221A-09 ISSUE AG



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.036	0.64	0.91
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.161	2.80	4.10
J	0.014	0.025	0.36	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

STYLE 1:

- PIN 1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

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