

NPN 2N3713 – 2N3714 – 2N3715 – 2N3716

EPITAXIAL-BASE TRANSISTORS

The 2N3713, 2N3714, 2N3715 and 2N3716 are silicon epitaxial-base NPN power transistor in Jedec TO-3 metal case. They are intended for use in power linear and switching applications. The complementary PNP types are 2N3789, 2N3790, 2N3791 and 2N3792 respectively. Compliance to RoHS.

ABSOLUTE MAXIMUM RATINGS

Symbol	Ratings		Value	Unit
V_{CBO}	Collector-Base Voltage	$I_E = 0$	2N3713	V
			2N3715	
			2N3714	
			2N3716	
V_{CEO}	Collector-Emitter Voltage	$I_B = 0$	2N3713	V
			2N3715	
			2N3714	
			2N3716	
V_{EBO}	Emitter-Base Voltage	$I_C = 0$	7.0	V
I_C	Collector Current		10	A
I_B	Base Current		4.0	A
P_D	Total Device Dissipation	@ $T_C = 25^\circ$	150	W
T_J	Junction Temperature		-65 to +200	$^\circ\text{C}$
T_S	Storage Temperature			

THERMAL CHARACTERISTICS

Symbol	Ratings	Value	Unit
R_{thJC}	Thermal Resistance, Junction to Case (Max)		1.17 $^\circ\text{C/W}$

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit	
$V_{CEO(BR)}$	Collector-Emitter Breakdown Voltage	$I_C=200\text{ mA}, I_B=0\text{ (*)}$	2N3713	60	-	-	V
			2N3715				
			2N3714	80	-	-	
			2N3716				
$V_{CEO(SUS)}$	Collector-Emitter Sustaining Voltage (*)	$I_C=200\text{ mA}, I_B=0\text{ (*)}$	2N3713	60	-	-	V
			2N3715				
			2N3714	80	-	-	
			2N3716				
I_{CEO}	Collector-Emitter Current	$V_{CE}=30\text{ V}, I_B=0$	2N3713	-	-	0.7	mA
			2N3715				
		$V_{CE}=40\text{ V}, I_B=0$	2N3714	-	-	0.7	
			2N3716				
I_{CEV}	Collector Cutoff Current	$V_{CE}=80\text{ V}, V_{EB}=-1.5\text{ V}$	2N3713	-	-	1	mA
			2N3715				
		$V_{CE}=100\text{ V}, V_{EB}=-1.5\text{ V}$	2N3714	-	-	1	
			2N3716				
		$V_{CE}=60\text{ V}, V_{EB}=-1.5\text{ V}$ $T_C = 150^\circ\text{C}$	2N3713	-	-	10	
			2N3715				
		$V_{CE}=80\text{ V}, V_{EB}=-1.5\text{ V}$ $T_C = 150^\circ\text{C}$	2N3714	-	-	10	
			2N3716				
I_{EBO}	Emitter Cutoff Current	$V_{BE}=7\text{ V}, I_C=0$	2N3713	-	-	5	mA
			2N3714				
			2N3715				
			2N3716				
h_{FE}	DC Current Gain (*) (**)	$I_C=1\text{ A}, V_{CE}=2\text{ V}$	2N3713	25	-	90	-
			2N3714				
			2N3715	50	-	150	
			2N3716				
		$I_C=3\text{ A}, V_{CE}=2\text{ V}$	2N3713	15	-	-	
			2N3714				
			2N3715	30	-	-	
			2N3716				
		$I_C=10\text{ A}, V_{CE}=4\text{ V}$	2N3713	5	-	-	
			2N3714				
			2N3715				
			2N3716				
$V_{CE(SAT)}$	Collector-Emitter saturation Voltage (*) (**)	$I_C=5\text{ A}, I_B=0.5\text{ A}$	2N3713	-	-	1	V
			2N3714				
			2N3715	-	-	0.8	
			2N3716				

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ELECTRICAL CHARACTERISTICS

TC=25°C unless otherwise noted

Symbol	Ratings	Test Condition(s)	Min	Typ	Max	Unit	
$V_{BE(SAT)}$	Base-Emitter saturation Voltage (*) (**)	$I_C=5\text{ A}, I_B=0.5\text{ A}$	2N3713	-	-	2	V
			2N3714				
			2N3715	-	-	1.5	
			2N3716				
V_{BE}	Base-Emitter Voltage (*) (**)	$I_C=3\text{ A}, V_{CE}=2\text{ V}$	2N3713	-	-	1.5	V
			2N3714				
			2N3715				
			2N3716				
h_{fe}	Small Signal Current Gain	$V_{CE}=10\text{ V}, I_C=0.5\text{ A}$ $f=1.0\text{ kHz}$	2N3713	25	-	250	-
			2N3714				
			2N3715				
			2N3716				
		$V_{CE}=10\text{ V}, I_C=0.5\text{ A}$ $f=1.0\text{ MHz}$	2N3713	4	-	4	-
			2N3714				
			2N3715				
			2N3716				

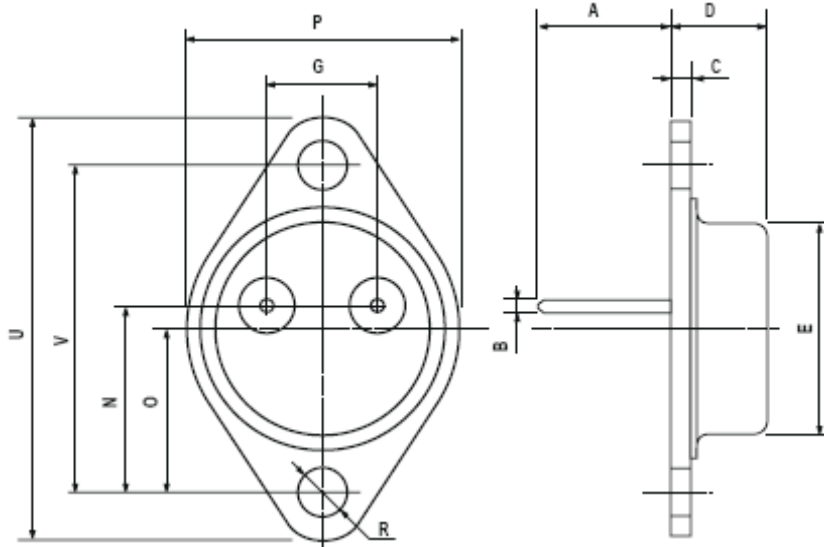
(*) Pulse Width $\approx 300\ \mu\text{s}$, Duty Cycle $\angle 2.0\%$

(**) These parameters are measured with voltage sensing contacts separate from the current carrying contacts

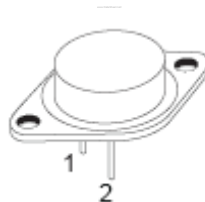
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MECHANICAL DATA CASE TO-3

DIMENSIONS (mm)		
	min	max
A	11	13.10
B	0.97	1.15
C	1.5	1.65
D	8.32	8.92
F	19	20
G	10.70	11.1
N	16.50	17.20
P	25	26
R	4	4.09
U	38.50	39.30
V	30	30.30



Pin 1 :	Base
Pin 2 :	Emitter
Case :	Collector



Revised September 2012

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