

PNP LOW POWER SILICON TRANSISTOR

Qualified per MIL-PRF-19500/485

Devices

2N5415
2N5415S

2N5416
2N5416S

Qualified Level

JAN
JANTX
JANTXV

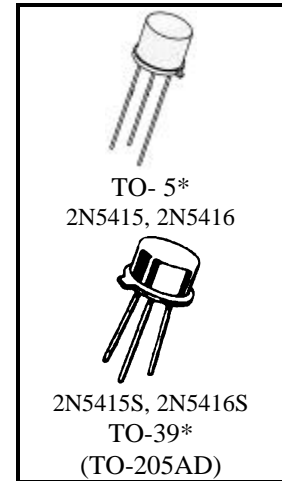
MAXIMUM RATINGS

Ratings	Symbol	2N5415	2N5416	Units
Collector-Emitter Voltage	V_{CEO}	200	300	Vdc
Collector-Base Voltage	V_{CBO}	200	350	Vdc
Emitter-Base Voltage	V_{EBO}	6.0		Vdc
Collector Current	I_C	1.0		Adc
Total Power Dissipation	P_T	@ $T_A = +25^{\circ}C$		0.75
		@ $T_C = +25^{\circ}C$		10
Operating & Storage Temperature Range	T_{op}, T_{stg}	-65 to +200		$^{\circ}C$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max.	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	17.5	$^{\circ}C/W$

- 1) Derate linearly 4.28 mW/ $^{\circ}C$ for $T_A > +25^{\circ}C$
- 2) Derate linearly 57.1 mW/ $^{\circ}C$ for $T_C > +25^{\circ}C$



*See appendix A for package outline

ELECTRICAL CHARACTERISTICS ($T_A = 25^{\circ}C$ unless otherwise noted)

Characteristics	Symbol	Min.	Max.	Unit	
OFF CHARACTERISTICS					
Collector-Emitter Cutoff Current	I_{CEO}		50	μA_{dc}	
$V_{CE} = 150$ Vdc					2N5415
$V_{CE} = 200$ Vdc					2N5415
$V_{CE} = 250$ Vdc					2N5416
$V_{CE} = 300$ Vdc	2N5416		1.0	mAdc	
Emitter-Base Cutoff Current	I_{EBO}		20	μA_{dc}	
$V_{EB} = 6.0$ Vdc					
Collector-Emitter Cutoff Current	I_{CEX}		50	μA_{dc}	
$V_{CE} = 200$ Vdc, $V_{BE} = 1.5$ Vdc					2N5415
$V_{CE} = 300$ Vdc, $V_{BE} = 1.5$ Vdc	2N5416		50	μA_{dc}	
Collector-Base Cutoff Current	I_{CBO1}		50	μA_{dc}	
$V_{CB} = 175$ Vdc					2N5415
$V_{CB} = 280$ Vdc	2N5416		50	μA_{dc}	
Collector-Base Cutoff Current	I_{CBO2}		500	μA_{dc}	
$V_{CB} = 200$ Vdc					2N5415
$V_{CB} = 350$ Vdc	2N5416		500	μA_{dc}	

2N5415, 2N5416 JAN, SERIES

ELECTRICAL CHARACTERISTICS (con't)

Characteristics	Symbol	Min.	Max.	Unit
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ON CHARACTERISTICS ⁽³⁾

Forward-Current Transfer Ratio I _C = 50 mA _{dc} , V _{CE} = 10 V _{dc} I _C = 1.0 mA _{dc} , V _{CE} = 10 V _{dc}	h _{FE}	30 15	120	
Collector-Emitter Saturation Voltage I _C = 50 mA _{dc} , I _B = 5.0 mA _{dc}	V _{CE(sat)}		2.0	V _{dc}
Base-Emitter Voltage I _C = 50 mA _{dc} , V _{CE} = 10 V _{dc}	V _{BE}		1.5	V _{dc}

DYNAMIC CHARACTERISTICS

Magnitude of Common Emitter Small-Signal Short Circuit Forward Current Transfer Ratio I _C = 10 mA _{dc} , V _{CE} = 10 V _{dc} , f = 5.0 MHz	h _{fe}	3.0	15	
Forward Current Transfer Ratio I _C = 5.0 mA _{dc} , V _{CE} = 10 V _{dc} , f = 1.0 kHz	h _{fe}	25		
Output Capacitance V _{CB} = 10 V _{dc} , I _E = 0, 100 kHz ≤ f ≤ 1.0 MHz	C _{obo}		15	pF
Input Capacitance V _{EB} = 5.0 V _{dc} , I _C = 0, 100 kHz ≤ f ≤ 1.0 MHz	C _{ibo}		75	pF

SWITCHING CHARACTERISTICS

Turn-On Time V _{CC} = 200 V _{dc} , I _C = 50 mA _{dc} , I _{B1} = 5.0 mA _{dc}	t _{on}		1.0	μs
Turn-Off Time V _{CC} = 200 V _{dc} , I _C = 50 mA _{dc} , I _{B1} = I _{B2} = 5.0 mA _{dc}	t _{off}		10	μs

SAFE OPERATING AREA

DC Tests T _C = +25°C; 1 Cycle; t = 0.4 s				
Test 1 V _{CE} = 10 V _{dc} , I _C = 1.0 A _{dc}				
Test 2 V _{CE} = 100 V _{dc} , I _C = 100 mA _{dc}				
Test 3 V _{CE} = 200 V _{dc} , I _C = 24 mA _{dc} 2N5415				
Test 4 V _{CE} = 300 V _{dc} , I _C = 10 mA _{dc} 2N5416				

(3) Pulse Test: Pulse Width = 300μs, Duty Cycle ≤ 2.0%.