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MJ15003 (NPN) & MJ15004 (PNP) Silicon Complementary Transistors High Power Audio, Disk Head Positioner for Linear Applications TO-3 Type Package

Description:

The MJ15003 (NPN) and MJ15004 (PNP) are complementary silicon power transistors in a TO-3 type package designed for high power audio, disk head positioners, and other linear applications.

Features:

- High Safe Operating Area: 250W @ 50V
- For Low Distortion Complementary Designs
- High DC Current Gain: $h_{FE} = 25$ Min @ $I_C = 5A$

Absolute Maximum Ratings:

Collector-Emitter Voltage, $V_{CEO(sus)}$	140V
Collector-Base Voltage, V_{CBO}	140V
Emitter-Base Voltage, V_{EBO}	5V
Continuous Collector Current, I_C	20A
Continuous Base Current, I_B	5A
Continuous Emitter Current, I_E	25A
Total Power Dissipation ($T_C = +25^\circ C$), P_D	250W
Derate Above $25^\circ C$	1.43W/ $^\circ C$
Operating Junction Temperature Range, T_J	-65° to $+200^\circ C$
Storage Temperature Range, T_{stg}	-65° to $+200^\circ C$
Thermal Resistance, Junction-to-Case, R_{thJC}	$0.70^\circ C/W$
Lead Temperature (During Soldering, 1/16" from Case, 10sec Max), T_L	$+265^\circ C$

Electrical Characteristics: ($T_C = +25^\circ C$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 200mA, I_B = 0$, Note 1	140	-	-	V
Collector Cutoff Current	I_{CEX}	$V_{CE} = 140V, V_{BE(off)} = 1.5V$	-	-	100	μA
		$V_{CE} = 140V, V_{BE(off)} = 1.5V, T_C = +150^\circ C$	-	-	2	mA
	I_{CEO}	$V_{CE} = 140V, I_B = 0$	-	-	250	μA
Emitter Cutoff Current	I_{EBO}	$V_{EB} = 5V, I_C = 0$	-	-	100	μA

Note 1. Pulse Test: Pulse Width = 300 μs , Duty Cycle = 2%.

Electrical Characteristics (Cont'd): ($T_C = +25^\circ\text{C}$ unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Second Breakdown						
Second Breakdown Collector Current with Base Forward Bias	$I_{S/b}$	$V_{CE} = 50\text{V}, t = 1\text{s}$ (non-repetitive)	5	-	-	μA
		$V_{CE} = 100\text{V}, t = 1\text{s}$ (non-repetitive)	1	-	-	μA
ON Characteristics						
DC Current Gain	h_{FE}	$V_{CE} = 2\text{V}, I_C = 5\text{A}$	25	-	150	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 5\text{A}, I_B = 500\text{mA}$	-	-	1	V
Base-Emitter On Voltage	$V_{BE(on)}$	$V_{CE} = 2\text{V}, I_C = 5\text{A}$	-	-	2	V
Dynamic Characteristics						
Current Gain-Bandwidth Product	f_T	$V_{CE} = 10\text{V}, I_C = 500\text{mA}, f_{\text{test}} = 0.5\text{MHz}$	2	-	-	MHz
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}, I_E = 0, f_{\text{test}} = 1\text{MHz}$	-	-	1000	pF

