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TIP3055 Silicon NPN Transistor Power Amp, Switch TO-247 Type Package

Description:

The TIP3055 is a silicon NPN transistor in a TO-247 type package designed for general purpose switching and amplifier applications.

Features:

- DC Current Gain: $h_{FE} = 20 - 70$ at $I_C = 4A$
- Collector-Emitter Saturation Voltage: $V_{CE(sat)} = 1.1V$ (Max) at $I_C = 4A$
- Excellent Safe Operating Area

Absolute Maximum Ratings: (Note 1)

Collector-Emitter Voltage, V_{CEO}	60V
Collector-Emitter Voltage, V_{CER}	70V
Collector-Base Voltage, V_{CB}	100V
Emitter-Base Voltage, V_{EB}	7V
Continuous Collector Current, I_C	15A
Base Current, I_B	7A
Total Power Dissipation ($T_C = +25^\circ C$), P_D	90W
Derate Above $+25^\circ C$	0.72W/ $^\circ C$
Operating Junction Temperature Range, T_J	-65° to $+150^\circ C$
Storage Temperature Range, T_{stg}	-65° to $+150^\circ C$
Thermal Resistance, Junction-to-Case, R_{thJC}	1.39 $^\circ C/W$
Thermal Resistance, Junction-to-Ambient, R_{thJA}	35.7 $^\circ C/W$

Note 1. Stresses exceeding Absolute 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 Operation Conditions may affect device reliability.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
OFF Characteristics						
Collector-Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_C = 30mA, I_B = 0$, Note 2	60	-	-	V
Collector Cutoff Current	I_{CER}	$V_{CE} = 70V, R_{BE} = 100\Omega$	-	-	1.0	mA
	I_{CEO}	$V_{CE} = 30V, I_B = 0$	-	-	0.7	mA
	I_{CEV}	$V_{CE} = 100V, V_{BE(off)} = 1.5V$	-	-	5.0	mA
Emitter Cutoff Current	I_{EBO}	$V_{BE} = 7V, I_C = 0$	-	-	5	mA

Note 2. Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2\%$.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
ON Characteristics (Note 2)						
DC Current Gain	h_{FE}	$V_{CE} = 4\text{V}, I_C = 4\text{A}$	20	-	70	
		$V_{CE} = 4\text{V}, I_C = 10\text{A}$	5	-	-	
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 4\text{A}, I_B = 400\text{mA}$	-	-	1.1	V
		$I_C = 10\text{A}, I_B = 3.3\text{A}$	-	-	3.0	V
Base-Emitter On Voltage	$V_{BE(on)}$	$I_C = 4\text{A}, V_{CE} = 4\text{V}$	-	-	1.8	V
Second Breakdown						
Second Breakdown Collector Current with Base Forward Biased	$I_{s/b}$	$V_{CE} = 30\text{V}, t = 1.0\text{s};$ Non-Repetitive	3.0	-	-	A
Dynamic Characteristics						
Current Gain - Bandwidth Product	f_T	$I_C = 500\text{mA}, V_{CE} = 10\text{V}, f = 1\text{MHz}$	2.5	-	-	MHz
Small-Signal Current Gain	h_{fe}	$V_{CE} = 4\text{V}, I_C = 1\text{A}, f = 1\text{kHz}$	15	-	-	kHz

Note 2. Pulse Test: Pulse Width = $300\mu\text{s}$, Duty Cycle $\leq 2\%$.

