

RADIATION HARDENED NPN POWER SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/613

DEVICES

2N7373

LEVELS

- JANSM – 3K Rads (Si)
- JANSD – 10K Rads (Si)
- JANSP – 30K Rads (Si)
- JANSL – 50K Rads (Si)
- JANSR – 100K Rads (Si)
- JANSF – 300K Rads (Si)

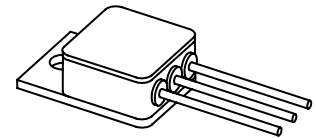
ABSOLUTE MAXIMUM RATINGS ($T_C = +25^\circ\text{C}$ unless otherwise noted)

Parameters / Test Conditions	Symbol	Value	Unit
Collector-Emitter Voltage	V_{CEO}	80	Vdc
Collector-Base Voltage	V_{CBO}	100	Vdc
Emitter-Base Voltage	V_{EBO}	5.0	Vdc
Collector Current	I_C	5.0	A dc
Total Power Dissipation @ $T_A = +25^\circ\text{C}$ ⁽¹⁾ @ $T_C = +25^\circ\text{C}$ ⁽²⁾	P_T	4.0 58	W
Operating & Storage Junction Temperature Range	T_j, T_{stg}	-65 to +200	°C
Thermal Resistance, Junction-to Case	$R_{\theta JC}$	3	°C/W

- 1) Derate linearly 22.8mW/°C for $T_A > 25^\circ\text{C}$
- 2) Derate linearly 331mW/°C for $T_C > 25^\circ\text{C}$

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

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
OFF CHARACTERISTICS				
Collector-Emitter Breakdown Voltage $I_C = 100\text{mA dc}$	$V_{(BR)CEO}$	80		Vdc
Collector-Emitter Cutoff Current $V_{CE} = 60\text{Vdc}, V_{BE} = 0\text{Vdc}$ $V_{CE} = 100\text{Vdc}, V_{BE} = 0\text{Vdc}$	I_{CES1} I_{CES2}		1.0 1.0	$\mu\text{A dc}$ mA dc
Collector-Emitter Cutoff Current $V_{CE} = 40\text{Vdc}, I_B = 0$	I_{CEO}		50	$\mu\text{A dc}$
Emitter-Base Cutoff Current $V_{EB} = 4.0\text{Vdc}$ $V_{EB} = 5.5\text{Vdc}$	I_{EBO1} I_{EBO2}		1.0 1.0	$\mu\text{A dc}$ mA dc



TO-254AA

PIN 1 = BASE
PIN 2 = COLLECTOR
PIN 3 = EMITTER

SEE FIGURE 1

RADIATION HARDENED NPN POWER SILICON SWITCHING TRANSISTOR

Qualified per MIL-PRF-19500/613

ELECTRICAL CHARACTERISTICS ($T_A = +25^\circ\text{C}$, unless otherwise noted) (CONT.)

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
ON CHARACTERISTICS ⁽³⁾				
Forward-Current Transfer Ratio $I_C = 0.05\text{A}_{dc}$, $V_{CE} = 5.0\text{V}_{dc}$ $I_C = 2.5\text{A}_{dc}$, $V_{CE} = 5.0\text{V}_{dc}$ $I_C = 5.0\text{A}_{dc}$, $V_{CE} = 5.0\text{V}_{dc}$	h_{FE1} h_{FE2} h_{FE3}	50 70 40	--- 200 ---	
Base-Emitter Non-Saturated Voltage $V_{CE} = 5.0\text{V}_{dc}$, $I_C = 2.5\text{A}_{dc}$	V_{BE}		1.45	Vdc
Base-Emitter Saturation Voltage $I_C = 2.5\text{A}_{dc}$, $I_B = 0.25\text{A}_{dc}$ $I_C = 5.0\text{A}_{dc}$, $I_B = 0.5\text{A}_{dc}$	$V_{BE(sat)1}$ $V_{BE(sat)2}$		1.45 2.2	Vdc
Collector-Emitter Saturation Voltage $I_C = 2.5\text{A}_{dc}$, $I_B = 0.25\text{A}_{dc}$ $I_C = 5.0\text{A}_{dc}$, $I_B = 0.5\text{A}_{dc}$	$V_{CE(sat)1}$ $V_{CE(sat)2}$		0.75 1.5	Vdc

DYNAMIC CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Common Emitter Small Signal, Short Circuit Forward Current Transfer Ratio $V_{CE} = 5\text{V}_{dc}$, $I_C = 100\text{mA}_{dc}$, $f = 1\text{kHz}$	h_{fe}	50		
Magnitude of Common Emitter Small-Signal Short-Circuit Forward Current Transfer Ratio $I_C = 0.5\text{A}_{dc}$, $V_{CE} = 5\text{V}_{dc}$, $f = 10\text{MHz}$	$ h_{fe} $	7.0		
Output Capacitance $V_{CB} = 10\text{V}_{dc}$, $I_E = 0$, $100\text{kHz} \leq f \leq 1.0\text{MHz}$	C_{obo}		250	pF

SAFE OPERATING AREA

DC Tests $T_C = +25^\circ\text{C}$, 1 Cycle, $t = 1\text{s}$ Test 1 $V_{CE} = 12\text{V}_{dc}$, $I_C = 5.0\text{A}_{dc}$ Test 2 $V_{CE} = 32\text{V}_{dc}$, $I_C = 1.5\text{A}_{dc}$ Test 3 $V_{CE} = 80\text{V}_{dc}$, $I_C = 100\text{mA}_{dc}$
--

(3) Pulse Test: Pulse Width = 300 μs , Duty Cycle $\leq 2.0\%$

