NEC
ELECTRON DEVICE

SILICON POWER TRANSISTOR
NTC2518(V125)

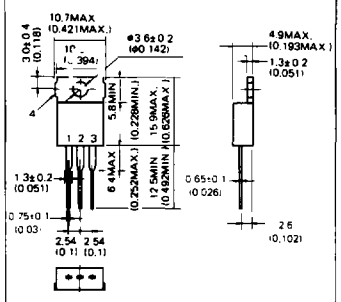
HIGH SPEED HIGH CURRENT SWITCHING
NPN SILICON TRIPLE DIFFUSED TRANSISTOR

Industrial Use

DESCRIPTION

Suitable for switching regulator, DC-DC converter and ultrasonic appliance applications.

PACKAGE DIMENSIONS
in millimeters (inches)



1 Base (B)
2 Collector (C)
3 Emitter (E)
4 Fin (Collector)

JEDEC TO-220AB

FEATURES

- High speed, high voltage switching.
- Low collector saturation voltage.
- Specified of reverse biased SOA with inductive loads.

ABSOLUTE MAXIMUM RATINGS

Maximum Voltages and Currents (Ta=25°C)

Collector to Emitter Voltage	V_{CEX}	500	V
Collector to Emitter Sustaining Voltage	$V_{CEO(SUS)}$	400	V
Collector to Emitter Sustaining Voltage	$V_{CEX(SUS)}$	450	V
Emitter to Base Voltage	V_{EBO}	8.0	V
Continuous Collector Current	$I_{C(DC)}$	5.0	A
Peak Collector Current	$I_{C(pulse)}$*	10	A
Continuous Base Current	$I_{B(DC)}$	2.5	A
Maximum Power Dissipations			
Total Power Dissipation	$P_{T(Tc=25°C)}$	50	W
Total Power Dissipation	$P_{T(Ta=25°C)}$	2.0	W
Maximum Temperatures			
Junction Temperature	Tj	150	°C
Storage Temperature	Tstg	−55 to +150	°C
Lead Temperature			
1/8 inch from case for 10 seconds	T_L	260	°C
Thermal Resistances			
Junction to Case	$R_{th(j-c)}$	2.5	°C/W
Junction to Ambient	$R_{th(j-a)}$	62.5	°C/W

*Pulsed PW ≤ 300μs, duty cycle ≤ 10%

ELECTRICAL CHARACTERISTICS (Ta=25°C unless otherwise noted.)

CHARACTERISTIC	SYMBOL	MIN.	TYP.	MAX.	UNIT	TEST CONDITIONS
Collector to Emitter Sustaining Voltage	$V_{CEO(SUS)}$	400			V	I_C=2.0A, I_B=0.4A, L=100μH
	$V_{CEX(SUS)1}$	450			V	I_C=2.0A, I_{B1}=−I_{B2}=0.4A, $V_{BE(OFF)}$ =−5V, L=180μH, Ta=125°C *1
	$V_{CEX(SUS)2}$	400			V	I_C=4.0A, I_{B1}=1.6A, I_{B2}=−0.4A, $V_{BE(OFF)}$=−5V, L=180μH, Ta=125°C *2
Collector Cutoff Current	I_{CEX1}			10	μA	V_{CE}=400V, $V_{BE(OFF)}$=−1.5V
	I_{CEX2}			1.0	mA	V_{CE}=400V, $V_{BE(OFF)}$=−1.5V, Ta=125°C
	I_{CER}			1.0	mA	V_{CE}=400V, R_{BE}=100Ω, Ta=125°C
Emitter Cutoff Current	I_{EBO}			10	μA	V_{EB}=5.0V, I_C=0
Second Breakdown Collector Current	$I_{S/B}$	1.0			A	V_{CE}=30V, t=1sec, Tc=25°C
Second Breakdown Energy	$E_{S/B}$	180			μJ	I_C=2.0A, I_{B1}=0.4A, $V_{BE(OFF)}$=−5V, R_{BB}=50Ω, L=40μH
DC Current Gain	h_{FE1}	20				V_{CE}=5V, I_C=0.5A *3
	h_{FE2}	10				V_{CE}=5V, I_C=2.0A *3
Collector Saturation Voltage	$V_{CE(sat)}$			1.0	V	I_C=2.0A, I_B=0.4A *3
Base Saturation Voltage	$V_{BE(sat)}$			1.5	V	
Gain Bandwidth Product	f_T	10			MHz	V_{CE}=10V, I_C=0.2A, f=3MHz
Output Capacitance	Cob			150	pF	V_{CB}=10V, I_E=0, f=1MHz
Turn On Time	t_{on}			1.0	μs	I_C=2.0A, I_{B1}=−I_{B2}=0.4A, V_{CC}≒150V, $V_{BE(OFF)}$=−5V, R_L=75Ω
Storage Time	tstg			2.5	μs	
Fall Time	tf			1.0	μs	

*1 V_{CE} clamped Vclamp = 450V
*2 V_{CE} clamped Vclamp = 400V
*3 Pulsed PW ≦ 350μs, duty cycle ≦ 2%

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