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NTE6403
Integrated Circuit
Silicon Bilateral Switch (SBS)

Description:

The NTE6403 is a silicon planer, monolithic integrated circuit having the electrical characteristics of a bilateral thyristor. This device is designed to switch at 8 volts with a 0.02%/°C temperature coefficient and excellently matched characteristics in both directions. A gate lead is provided to eliminate rate effect and to obtain triggering at lower voltages.

The NTE6403 is specifically designed and characterized for applications where stability of switching voltage over a wide temperature range and well matched bilateral characteristics are an asset. It is ideally suited for half wave and full wave triggering in low voltage SCR and TRIAC phase control circuits.

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Peak Recurrent Forward Current (PW = 10µs, Duty Cycle = 1%, T_A = +25°C) 1A
Peak Non–Recurrent Forward Current (PW = 10µs, T_A = +25°C) 5A
Power Dissipation (Note 1), P_D 300mW
DC Forward Anode Current (Note 1) 175mA
DC Gate Current (Note 1, Note 2) 5mA
Operating Junction Temperature Range, T_J . . . . . –55° to +125°C
Storage Temperature Range, T_{stg} . . . . . –65° to +150°C

Note 1. Derate linearly to zero at +125°C.

Note 2. This rating applicable only on OFF state. Maximum gate current in conducting state limited by maximum power rating.

Electrical Characteristics: (T_A = +25°C, Note 3 unless otherwise specified)

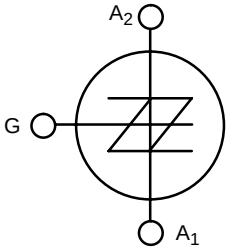
Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Static							
Switching Voltage	V_S			7.5	–	9.0	V
Switching Current	I_S			–	–	120	µA
Absolute Switching Voltage Difference	$\|V_{S2} – V_{S1}\|$			–	–	200	mV
Absolute Switching Current Difference	$\|I_{S2} – I_{S1}\|$			–	–	10	µA
Holding Current	I_H			–	–	.5	mA
OFF State Current	I_B	V_F = 5V	T_A = +25°C	–	–	0.1	µA
			T_A = +85°C	–	–	10.0	µA
Temperature Coefficient of Switching Voltage	T_C	T_A = –55° to +85°C		–	±0.05	–	%/°C
ON State Forward Voltage Drop	V_F	I_F = 175mA		–	–	1.7	V
Forward Gate Current to Trigger	I_{GF}	V_F = 5V, R_L = 1kΩ		–	–	100	µA

Note 3. This device is a symmetrical negative resistance diode. All electrical limits shown above apply in either direction of current flow.

Electrical Characteristics (Cont'd): (T_A = +25°C, Note 3 unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Dynamic						
Peak Pulse Amplitude	V_o		3.5	–	–	V
Turn–On Time	t_{on}		–	–	1.0	μs
Turn–Off Time	t_{off}		–	–	30.0	μs

Note 3. This device is a symmetrical negative resistance diode. All electrical limits shown above apply in either direction of current flow.



SBS CIRCUIT SYMBOL

