

NTE7053
Integrated Circuit
22W Bridge–Stereo Amplifier
for Car Radio

Description:

The NTE7053 is an audio power amplifier is a 11–Lead Staggered SIP type package designed for car radio applications.

Thanks to the fully complementary PNP/NPN output configuration, the high performance of this device is obtained without bootstrap capacitors.

A delay turn–on mute circuit eliminates audible ON/OFF noise, and a novel short circuit protection system prevents spurious intervention with highly inductive loads.

Features:

- Few External Components
- No Boucherot Cells
- No Bootstrap Capacitors
- High Output Power
- No Switch ON/OFF Noise
- Very Low Stand–by Current
- Fixed Gain (30dB Stereo)
- Programmable Turn–On Delay

Protections:

- Output AC–DC Short Circuit to GND and to Supply Voltage
- Very Inductive Loads
- Loudspeaker Protection
- Overrating Chip Temperature
- Load Dump Voltage
- Fortuitous Open Ground

Absolute Maximum Ratings:

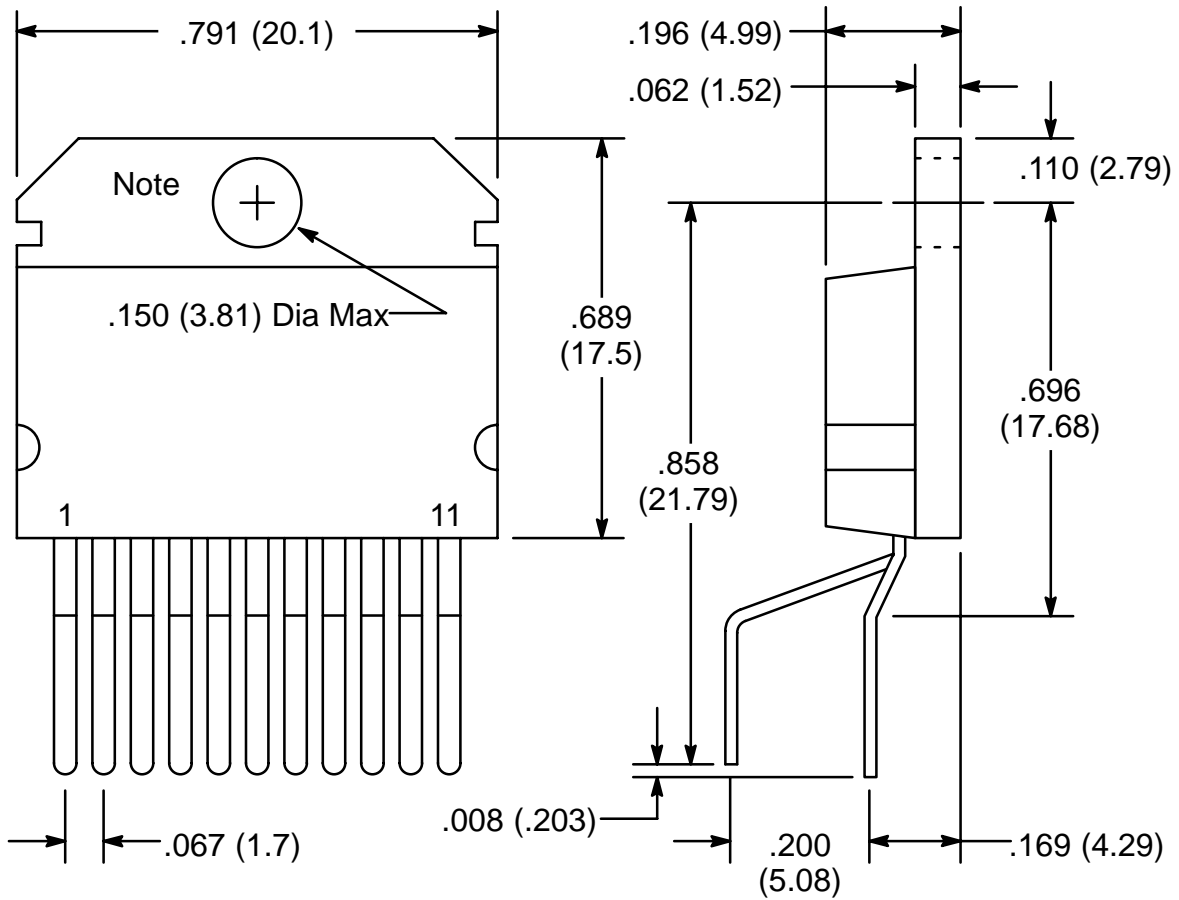
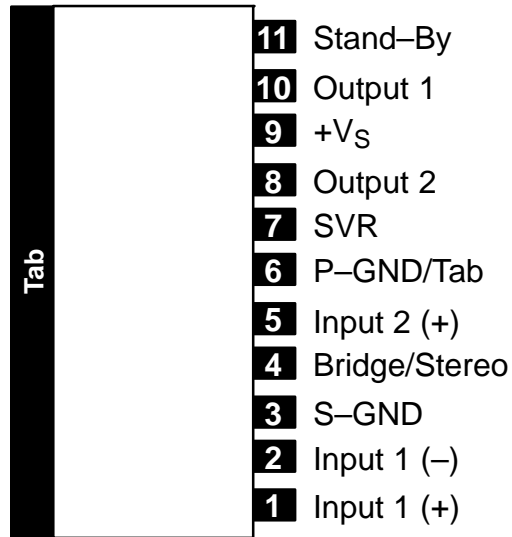
Operating Supply Voltage, V_S	18V
DC Supply Voltage, V_S	28V
Peak Supply Voltage (for $t = 50\text{ms}$), V_S	40V
Output Peak Current (Non–Repetitive for $t = 100\mu\text{s}$), I_O	5A
Output Peak Current (Repetitive Frequency $> 10\text{Hz}$), I_O	4A
Power Dissipation ($T_C = +85^\circ\text{C}$), P_{tot}	36W
Junction Temperature Range, T_J	-40° to $+150^\circ\text{C}$
Storage Temperature Range, T_{stg}	-40° to $+150^\circ\text{C}$
Maximum Thermal Resistance, Junction–to–Case, R_{thJC}	1.8°C/W

Electrical Characteristics: ($T_A = +25^{\circ}\text{C}$, $V_S = 14.4\text{V}$, $f = 1\text{kHz}$ unless otherwise specified)

Parameter	Symbol	Test Conditions		Min	Typ	Max	Unit
Supply Voltage Range	V_S			8	–	18	V
Total Quiescent Drain Current	I_d	Stereo Configuration		–	–	120	mA
Stand-By Attenuation	A_{SB}			60	80	–	dB
Stand-By Current	I_{SB}			–	–	100	μA
Thermal Shut-Down Junction Temperature	T_{sd}			–	150	–	$^{\circ}\text{C}$
Stereo							
Output Power (Each Channel)	P_O	$d = 10\%$	$R_L = 2\Omega$	–	11	–	W
			$R_L = 3.2\Omega$	7	8	–	W
			$R_L = 4\Omega$	–	8.5	–	W
		$d = 10\%$, $V_S = 13.2\text{V}$	$R_L = 2\Omega$	–	9	–	W
			$R_L = 3.2\Omega$	–	6.5	–	W
			$R_L = 4\Omega$	–	5.5	–	W
Distortion	d	$P_O = 0.1\text{W to } 4\text{W}$, $R_L = 3.2\Omega$		–	–	0.5	%
Supply Voltage Rejection	SVR	$R_S = 10\text{k}\Omega$, $f = 100\text{Hz}$	$C3 = 22\mu\text{F}$	45	50	–	dB
			$C3 = 100\mu\text{F}$	–	57	–	dB
Crosstalk	CT	$f = 1\text{kHz}$		45	55	–	dB
		$f = 10\text{kHz}$		–	50	–	dB
Input Resistance	R_I			30	50	–	$\text{k}\Omega$
Voltage Gain	G_V			27	29	31	dB
Voltage Gain Match	G_V			–	–	1	dB
Input Noise Voltage	E_{IN}	Note 1	$R_S = 50\Omega$	–	2	–	μV
			$R_S = 10\text{k}\Omega$	–	2.7	7	μV
Bridge							
Output Power (Each Channel)	P_O	$d = 10\%$	$R_L = 3.2\Omega$	16	22	–	W
			$R_L = 4\Omega$	–	20	–	W
		$d = 10\%$, $V_S = 13.2\text{V}$	$R_L = 3.2\Omega$	–	19	–	W
			$R_L = 4\Omega$	–	17.5	–	W
Distortion	d	$P_O = 0.1\text{W to } 4\text{W}$, $R_L = 4\Omega$		–	–	1	%
Output Offset Voltage	V_{OS}			–	–	250	mV
Supply Voltage Rejection	SVR	$R_S = 10\text{k}\Omega$, $f = 100\text{Hz}$	$C3 = 22\mu\text{F}$	45	50	–	dB
			$C3 = 100\mu\text{F}$	–	57	–	dB
Input Resistance	R_I			–	50	–	$\text{k}\Omega$
Voltage Gain	G_V			33	35	37	dB
Input Noise Voltage	E_{IN}	Note 1	$R_S = 50\Omega$	–	2.7	–	μV
			$R_S = 10\text{k}\Omega$	–	3.2	–	μV

Note 1. 22Hz to 22kHz

Pin Connection Diagram
(Front View)



NOTE: Tab connected to Pin6