

## NTE7092, NTE7093, NTE7094, NTE7095 Integrated Circuit Hybrid Voltage Regulator

**Absolute Maximum Ratings:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Peak Input Voltage, $V_{IN}$		
NTE7092	950V	
NTE7093, NTE7094, NTE7095	550V	
Input Current, $I_{IN}$		
NTE7092		
Continuous	6A	
Pulse	12A	
NTE7093, NTE7095	6A	
NTE7094		
Continuous	10A	
Pulse	20A	
Power Dissipation ( $T_C = +100^\circ\text{C}$ ), $P_D$		
No Fin	3W	
$T_C = +100^\circ\text{C}$	27W	
Junction Temperature, $T_J$	+150°C	
Operating Temperature Range (Case Temperature, Note 1), $T_{opr}$	-20° to +125°C	
Storage Temperature Range, $T_{stg}$	-30° to +125°C	
Thermal Resistance, Junction-to-Case (Upper part of Junction Stem), $R_{thJC}$	1.8°C/W	

Note 1. Recommended Case Temperature:  $T_C = +100^\circ\text{C}$

**Electrical Characteristics:** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Set Reference Voltage	$V_{REF}$	$I_{IN} = 40\text{mA}$ , Note 2	7.00	7.15	7.30	V
Temperature Coefficient of Reference Voltage	$K_{VREF}$	$T_C = -20^\circ\text{C}$ to $+100^\circ\text{C}$ , $I_{IN} = 40\text{mA}$	-	-2	-	mV/°C
<b>Power Transistor Characteristics</b>						
Collector Saturation Voltage	$V_{CE(sat)}$	$I_C = 2\text{A}$ , $I_B = 0.4\text{A}$	-	-	1.0	V
NTE7092			-	-	0.3	V
NTE7093		$I_C = 5\text{A}$ , $I_B = 1\text{A}$	-	-	0.3	V
NTE7094			-	-	0.4	V
NTE7095	-	-	-	-	0.4	V

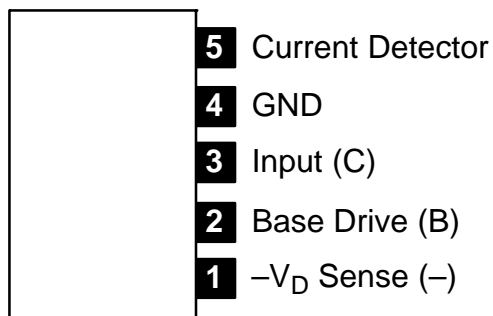
Note 2. The Off-line detecting control voltage is approximately 6V.

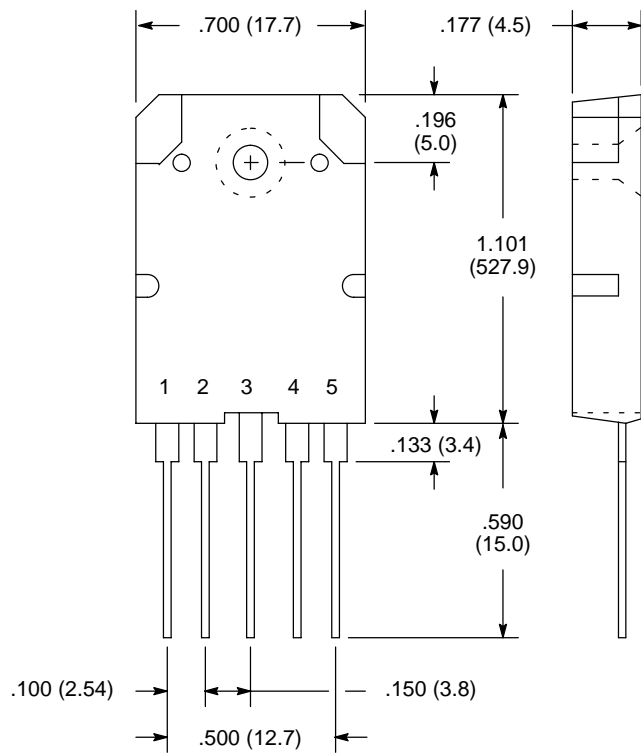
**Electrical Characteristics (Cont'd):** ( $T_A = +25^\circ\text{C}$  unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Power Transistor Characteristics (Cont'd)</b>						
DC Current Gain NTE7092	$h_{FE}$	$V_{CE} = 4V, I_C = 1A$	10	–	30	
NTE7093			13	–	40	
NTE7094, NTE7095			15	–	40	
Collector Cutoff Current NTE7092	$I_{CEX}$	$V_{CE} = 950V, V_{BE} = 1.5V$	–	–	1	mA
NTE7093, NTE7094		$V_{CE} = 550V, V_{BE} = 1.5V$	–	–	1	mA
NTE7095		$V_{CE} = 900V, V_{BE} = 1.5V$	–	–	1	mA
Base–Emitter Voltage	$V_{EB(R)}$	$I_{EB(R)} = 100\mu A, \text{Note 3}$	–	–	1	V
Base–Emitter Saturation Voltage NTE7092, NTE7093, NTE7095	$V_{BE(sat)}$	$I_C = 2A, I_B = 0.4A$	–	–	1.5	V
NTE7094		$I_C = 5A, I_B = 1A$	–	–	1.5	V
Switching Time NTE7092	$t_s$	$V_{CC} = 250V, I_C = 2A, I_{B1} = 0.15A, I_{B2} = 0.5A$	–	–	7	$\mu s$
	$t_r$		–	–	1	$\mu s$
NTE7093	$t_s$	$I_C = 2A, R_L = 50\Omega, I_{B1} = 0.3A, I_{B2} = -0.3A$	–	–	12	$\mu s$
	$t_r$		–	–	0.4	$\mu s$
NTE7094	$t_s$	$I_C = 3A, R_L = 33\Omega, I_{B1} = 0.5A, I_{B2} = -0.5A$	–	–	12	$\mu s$
	$t_r$		–	–	0.7	$\mu s$
NTE7095	$t_s$	$I_C = 3A, R_L = 83\Omega, I_{B1} = 0.4A, I_{B2} = -0.4A$	–	–	12	$\mu s$
	$t_r$		–	–	0.4	$\mu s$

Note 3. The reverse Bias Current (Pulse) of Base–Emitter is no more than 400mA.

**Pin Connection Diagram**  
(Front View)





OR

