



ELECTRONICS, INC.

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## NTE2639 Silicon NPN Transistor CRT Horizontal Deflection, High Voltage, High Speed Switch

### **Description:**

The NTE2639 is a high voltage, high speed switching silicon NPN transistor in a plastic full-pack envelope designed for use in horizontal deflection circuits of color TV receivers.

### **Absolute Maximum Ratings:**

Collector-Emitter Voltage Peak Value ( $V_{BE} = 0V$ ), $V_{CESM}$ .....	1700V
Collector-Emitter Voltage (OpenBase), $V_{CEO}$ .....	825V
Collector Current, $I_C$	
DC .....	12A
Peak Value .....	30A
Base Current, $I_B$	
DC .....	12A
Peak Value .....	20A
Reverse Base Current (Average over any 20ms period), $-I_{B(AV)}$ .....	200mA
Reverse Base Current Peak Value (Note 1), $-I_{BM}$ .....	9A
Total Power Dissipation ( $T_{HS} \leq +25^\circ C$ ), $P_{tot}$ .....	45W
Electrostatic Discharge Capacitor Voltage (Human body model (250pF, 1.5k $\Omega$ ), $V_C$ .....	10kV
Operating Junction Temperature, $T_J$ .....	+150 $^\circ C$
Storage Temperature Range, $T_{stg}$ .....	-65 $^\circ$ to +150 $^\circ C$
Maximum Thermal Resistance, Junction-to-Heatsink, $R_{thJHS}$	
Without Heatsink Compound .....	3.7K/W
With Heatsink Compound .....	2.8K/W
Typical Thermal Resistance, Junction-to-Ambient (In Free Air), $R_{thJA}$ .....	35K/W

Note 1. Turn-off current.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
<b>Isolation Limiting Value and Characteristic</b>						
Repetitive Peak Voltage from All Three Terminals to External Heatsink	$V_{isol}$	R.H. $\leq 65\%$ ; Clean and Dustfree	–	–	2500	V
Capacitance from T2 to External Heatsink	$C_{isol}$	$f = 1\text{MHz}$	–	22	–	pF
<b>Static Characteristics</b>						
Collector Cutoff Current	$I_{CES}$	$V_{CE} = 1700\text{V}, V_{BE} = 0$	–	–	1.0	mA
		$V_{CE} = 1700\text{V}, V_{BE} = 0, T_J = +125^{\circ}\text{C}$	–	–	2.0	mA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB} = 7.5\text{V}, I_C = 0\text{A}$	–	–	1.0	mA
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	$I_B = 1\text{mA}$	7.5	13.5	–	V
Collector–Emitter Sustaining Voltage	$V_{CEO(sus)}$	$I_B = 0\text{A}, I_C = 100\text{mA}, L = 25\text{mH}$	825	–	–	V
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 7\text{A}, I_B = 1.75\text{A}$	–	–	1.0	V
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 7\text{A}, I_B = 1.75\text{A}$	–	–	1.1	V
DC Current Gain	$h_{FE}$	$V_{CE} = 5\text{V}, I_C = 0.1\text{A}$	–	22	–	
		$V_{CE} = 1\text{V}, I_C = 7\text{A}$	4.0	6.0	6.5	
<b>Dynamic Characteristics (Switching Times, 16kHz Line Deflection Circuit)</b>						
Turn–Off Storage Time	$t_s$	$I_{C(sat)} = 7\text{A}, L_C = 650\mu\text{H}, C_{fb} = 18\text{nF}, V_{CC} = 162\text{V}, I_{B(end)} = 1.5\text{A}, L_B = 2\mu\text{H}, -V_{BB} = 4\text{V}$	–	5.8	6.5	$\mu\text{s}$
Turn–Off Fall Time	$t_f$		–	0.6	0.8	$\mu\text{s}$

Note 2. Measured with half sine–wave voltage (curve tracer).

