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NTE2657 (NPN) & NTE2658 (PNP) Silicon Complementary Transistors Medium Power

Features:

- Low Saturation Voltage

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

Collector–Base Voltage, V_{CBO}	120V
Collector–Emitter Voltage, V_{CEO}	100V
Emitter–Base Voltage, V_{EBO}	5V
Peak Pulse Current, I_{CM}	6A
Continuous Collector Current, I_C	2A
Power Dissipation ($T_A = +25^\circ\text{C}$), P_{tot}	1W
Derate Above $+25^\circ\text{C}$	5.7mW/ $^\circ\text{C}$
Operating Junction Temperature Range, T_j	-55 to $+200^\circ\text{C}$
Storage Temperature Range, T_{stg}	-55 to $+200^\circ\text{C}$
Thermal Resistance, Junction–to–Ambient, R_{thJA1}	175 $^\circ\text{C}/\text{W}$
Thermal Resistance, Junction–to–Ambient (Note 1), R_{thJA2}	116 $^\circ\text{C}/\text{W}$
Thermal Resistance, Junction–to–Case, R_{thJC}	70 $^\circ\text{C}/\text{W}$

Note 1. Device mounted on P.C.B. with copper equal to 1sq. Inch minimum

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector–Base Breakdown Voltage	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}$	120	–	–	V
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}$, Note 2	100	–	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}$	5	–	–	V
Collector Cut–Off Current	I_{CBO}	$V_{CB} = 100\text{V}$	–	–	0.1	μA
		$V_{CB} = 100\text{V}$, $T_A = +100^\circ\text{C}$	–	–	10	
Emitter Cut–Off Current	I_{EBO}	$I_E = 100\mu\text{A}$	–	–	0.1	μA
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1\text{A}$, $I_B = 100\text{mA}$, Note 2	–	0.13	0.3	V
		$I_C = 2\text{A}$, $I_B = 200\text{mA}$, Note 2	–	0.23	0.5	
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	$I_C = 1\text{A}$, $I_B = 100\text{mA}$, Note 2	–	0.9	1.25	V
Base–Emitter Turn–On Voltage	$V_{BE(on)}$	$I_C = 1\text{A}$, $V_{CE} = 2\text{V}$, Note 2	–	0.8	1	V
Transition Frequency NTE2657	f_T	$I_C = 100\text{mA}$, $V_{CE} = 5\text{V}$, $f = 100\text{MHz}$	140	175	–	MHz
			NTE2658	100	140	

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit	
Switching Times NTE2657	t_{on}	$I_C = 500\text{mA}, V_{CC} = 10\text{V}, I_{B1}=I_{B2} = 50\text{mA}$	-	80	-	ns	
	t_{off}			1200			
	NTE2658		t_{on}		40		
			t_{off}		600		
Output Capacitance	C_{ob}	$V_{CB} = 10\text{V}, f = 1\text{MHz}$	-	-	30	pF	
Static Forward Current Transfer Ratio	h_{FE}	$I_C = 50\text{mA}, V_{CE} = 2\text{V}, \text{Note 2}$	70	200	-		
		$I_C = 500\text{mA}, V_{CE} = 2\text{V}, \text{Note 2}$	100	200	300		
		$I_C = 1\text{A}, V_{CE} = 2\text{V}, \text{Note 2}$	55	110	-		
		$I_C = 2\text{A}, V_{CE} = 2\text{V}, \text{Note 2}$	25	55	-		

Note 2. Measured under pulsed conditions: Pulse Width = $300\mu\text{s}$, Duty Cycle $\leq 2\%$.

