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NTE2659 (NPN) & NTE2660 (PNP) Silicon Complementary Transistors Medium Power

Features:

- Low Saturation Voltage

Applications:

- Motor Driver
- DC-to-DC Converters

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

Collector-Base Voltage, V_{CBO}	35V
Collector-Emitter Voltage, V_{CEO}	25V
Emitter-Base Voltage, V_{EBO}	5V
Peak Pulse Current, I_{CM}	6A
Continuous Collector Current, I_C	2A
Collector Power Dissipation ($T_A = +25^\circ\text{C}$), P_{tot}	1W
Derate above $+25^\circ\text{C}$	5.7mW/ $^\circ\text{C}$
Operating Temperature Range, T_{opr}	-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	$V_{(BR)CBO}$	$I_C = 100\mu\text{A}$	35	-	-	V
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	$I_C = 10\text{mA}$, Note 2	25	-	-	V
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	$I_E = 100\mu\text{A}$	5	-	-	V
Collector Cut-Off Current	I_{CBO}	$V_{CB} = 30\text{V}$	-	-	0.1	μA
		$V_{CB} = 30\text{V}$, $T_A = +100^\circ\text{C}$	-	-	10	
Emitter Cut-Off Current	I_{EBO}	$V_{EB} = 4\text{V}$	-	-	0.1	μA
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	$I_C = 1\text{A}$, $I_B = 100\text{mA}$, Note 2	-	0.12	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

Note 2. Measured under pulsed conditions: Pulse Width = 300 μs , Duty Cycle $\leq 2\%$.

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Forward Current Transfer Ratio	h_{FE}	$I_C = 50\text{mA}, V_{CE} = 2\text{V}, \text{Note 2}$	70	200	-	
		$I_C = 1\text{A}, V_{CE} = 2\text{V}, \text{Note 2}$	100	200	300	
		$I_C = 2\text{A}, V_{CE} = 2\text{V}, \text{Note 2}$	75	150	-	
		$I_C = 6\text{A}, V_{CE} = 2\text{V}, \text{Note 2}$	15	50	-	
Transition Frequency NTE2659	f_T	$I_C = 100\text{mA}, V_{CE} = 5\text{V}, f = 100\text{MHz}$	150	240	-	MHz
NTE2660			100	160	-	
Output Capacitance NTE2659	C_{obo}	$V_{CB} = 10\text{V}, f = 1\text{MHz}$	-	25	50	pF
NTE2660		$I_C = 100\text{mA}, V_{CE} = 5\text{V}, f = 100\text{MHz}$	-	55	100	
Switching Times NTE2659	t_{on}	$I_C = 500\text{mA}, V_{CC} = 10\text{V}, I_{B1}=I_{B2}=50\text{mA}$	-	55	-	ns
	t_{off}		-	300	-	
	t_{on}		-	40	-	ns
NTE2660	t_{off}		-	450	-	

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

