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## NTE3320 Insulated Gate Bipolar Transistor N-Channel Enhancement Mode, High Speed Switch TO3P Type Package

**Features:**

- Fourth Generation IGBT
- Enhancement Mode Type
- High Speed
- Low Switching Loss
- Low Saturation Voltage

**Applications:**

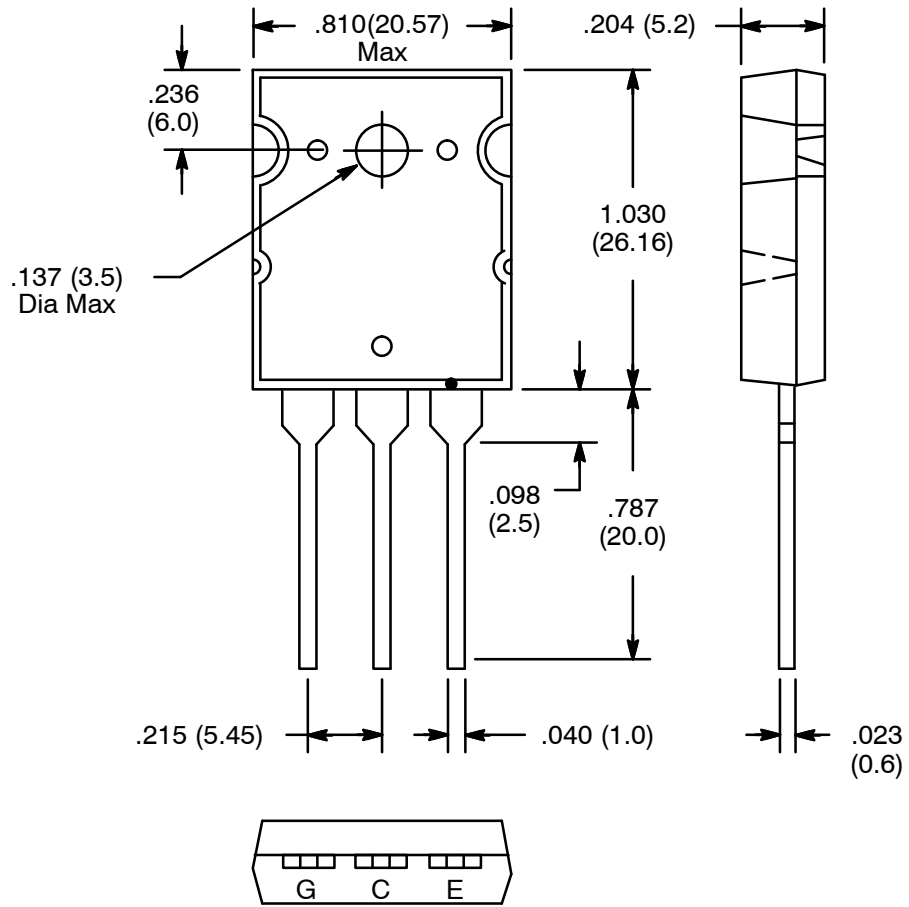
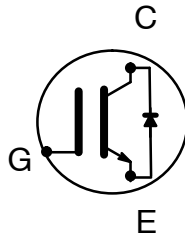
- High Power Switching

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

|  |                                     |
|--|-------------------------------------|
| Collector-Emitter Voltage, $V_{CES}$ .....                             | 600V                                |
| Gate-Emitter Voltage, $V_{GES}$ .....                                  | $\pm 20\text{V}$                    |
| Collector Current, $I_C$   |                                     |
| DC .....   | 50A                                 |
| Pulse (1ms) .....  | 100A                                |
| Collector Power Dissipation ( $T_C = +25^\circ\text{C}$ ), $P_C$ ..... | 240W                                |
| Operating Junction Temperature, $T_J$ .....                            | $+150^\circ\text{C}$                |
| Storage Temperature Range, $T_{stg}$ .....                             | $-55^\circ$ to $+150^\circ\text{C}$ |
| Thermal Resistance, Junction-to-Case, $R_{th(j-c)}$ .....              | $0.521^\circ\text{C/W}$             |
| Screw Torque .....   | $0.8\text{N}\cdot\text{m}$          |

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

| Parameter                            | Symbol        | Test Conditions   | Min | Typ  | Max       | Unit          |
|--------------------------------------|---------------|---|-----|------|-----------|---------------|
| Gate Leakage Current                 | $I_{GES}$     | $V_{GE} = \pm 20\text{V}, V_{CE} = 0$   | -   | -    | $\pm 500$ | nA            |
| Collector Cutoff Current             | $I_{CES}$     | $V_{CE} = 600\text{V}, V_{GE} = 0$  | -   | -    | 1.0       | mA            |
| Gate-Emitter Cutoff Voltage          | $V_{GE(off)}$ | $I_C = 5\text{ mA}, V_{CE} = 5\text{V}$   | 3.5 | -    | 6.5       | V             |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = 50\text{A}, V_{GE} = 15\text{V}$   | -   | 2.0  | 2.45      | V             |
| Input Capacitance                    | $C_{ies}$     | $V_{CE} = 10\text{V}, V_{GE} = 0, f = 1\text{MHz}$  | -   | 7900 | -         | pF            |
| Turn-On Delay Time                   | $t_{d(on)}$   | Inductive Load<br><br>$V_{CC} = 300\text{V}, I_C = 50\text{ A},$<br>$V_{GG} = 15\text{V}, R_G = 13\ \Omega$ | -   | 0.09 | -         | $\mu\text{s}$ |
| Rise Time                            | $t_r$         |   | -   | 0.07 | -         | $\mu\text{s}$ |
| Turn-On Time                         | $t_{on}$      |   | -   | 0.24 | -         | $\mu\text{s}$ |
| Turn-Off Delay Time                  | $t_{d(off)}$  |   | -   | 0.30 | -         | $\mu\text{s}$ |
| Fall Time                            | $t_f$         |   | -   | 0.05 | -         | $\mu\text{s}$ |
| Turn-Off Time                        | $t_{off}$     |   | -   | 0.43 | -         | $\mu\text{s}$ |
| Turn-On Switching Loss               | $E_{on}$      |   | -   | 1.30 | -         | mJ            |
| Turn-Off Switching Loss              | $E_{off}$     |   | -   | 1.34 | -         | mJ            |



**Note:** Collector connected to heat sink.