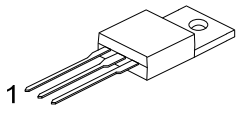
UG25N45 **Preliminary** ***NPN SILICON TRANSISTOR***

# N-CHANNEL INSULATED GATE BIPOLAR TRANSISTOR




TO-220

Lead-free: UG25N45L
Halogen-free: UG25N45G

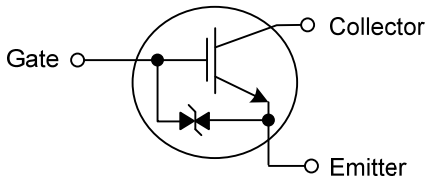
## ■ DESCRIPTION

UTC **UG25N45** is an N-channel NPN transistor. It can be used in strobe flash applications

## ■ FEATURES

* Very high input impedance
* Very high pick current capability
* Gate drive: 4.5V

## ■ SYMBOL




## ■ ORDERING INFORMATION

| Ordering Number | | | Package | Pin Assignment | | | Packing |
|---|---|---|---|---|---|---|---|
| Normal | Lead Free | Halogen Free | | 1 | 2 | 3 | |
| UG25N45-TA3-T | UG25N45L-TA3-T | UG25N45G-TA3-T | TO-220 | G | C | E | Tube |

| | |
|---|---|
| UG25N45L-TA3-T<br>(1)Packing Type<br>(2)Package Type<br>(3)Lead Plating | (1) T: Tube<br>(2) TA3: TO-220<br>(3) G: Halogen Free, L: Lead Free, Blank: Pb/Sn |

## ■ ABSOLUTE MAXIMUM RATINGS

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---|---|---|---|
| Collector-Emitter Voltage | $V_{CEO}$ | 450 | V |
| Gate-Emitter Voltage | $V_{GEO}$ | ±6 | V |
| Pulsed Gate-Emitter Current | $I_{GEP}$ | ±8 | A |
| Pulsed Collector Current | $I_{CP}$ | 150 | A |
| Power Dissipation @ $T_C$=25°C | $P_D$ | 2.5 | W |
| Junction Temperature | $T_J$ | +150 | °C |
| Operating Temperature | $T_{OPR}$ | -55 ~ +150 | °C |
| Storage Temperature | $T_{STG}$ | -55 ~ +150 | °C |

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

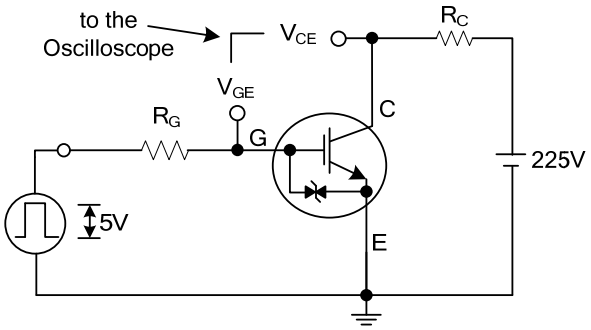
## ■ THERMAL DATA

| PARAMETER | SYMBOL | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|
| Junction-to-Ambient | $\theta_{JA}$ | | | 50 | ℃/W |

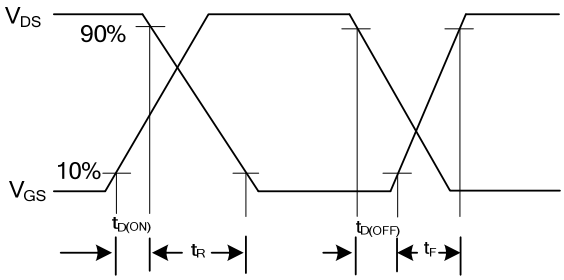
## ■ ELECTRICAL CHARACTERISTICS ($T_J$=25°C, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|---|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | | |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $V_{GE}$=4.5V, $I_{CP}$=150A (Pulsed) | | 6 | 8 | V |
| Collector-Emitter Leakage Current | $I_{CES}$ | $V_{CE}$=450V, $V_{GE}$=0 V | | | 10 | uA |
| Gate-Emitter Leakage Current | $I_{GES}$ | $V_{GE}$=±6V, $V_{CE}$=0V | | | 10 | |
| **ON CHARACTERISTICS** | | | | | | |
| Gate Threshold Voltage | $V_{GE(TH)}$ | $V_{CE}$=$V_{GE}$, $I_C$=250uA | 0.35 | | 1.2 | V |
| **DYNAMIC CHARACTERISTICS** | | | | | | |
| Input Capacitance | $C_{IES}$ | $V_{GE}$=0V, $V_{CE}$=25V, f=1.0MHz | | 2227 | | pF |
| Output Capacitance | $C_{OES}$ | | | 200 | | pF |
| Reverse Transfer Capacitance | $C_{RES}$ | | | 79 | | pF |
| **SWITCHING CHARACTERISTICS** | | | | | | |
| Turn-On Delay Time | $t_{D(ON)}$ | $V_{CC}$=225V, $I_C$ =50A, $R_G$=25Ω, $V_{GE}$=10V | | 11.5 | | ns |
| Turn-On Rise Time | $t_R$ | | | 24.5 | | ns |
| Turn-Off Delay Time | $t_{D(OFF)}$ | | | 150 | | ns |
| Turn-Off Fall Time | $t_F$ | | | 3.3 | | ns |
| Total Gate Charge | $Q_G$ | $V_{CE}$=360V, $V_{GE}$=4.5V, $I_C$=50A | | 64.5 | | nC |
| Gate-Emitter Charge | $Q_{GE}$ | | | 7 | | nC |
| Gate-Collector Charge | $Q_{GC}$ | | | 30 | | nC |

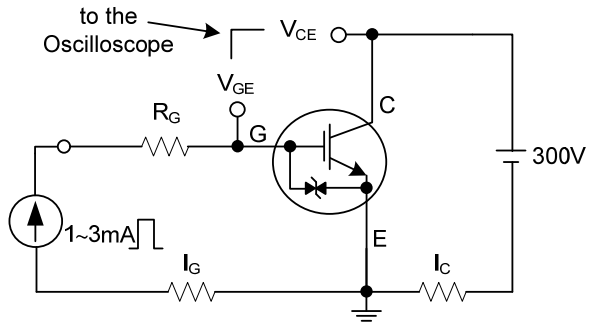
## ■ TYPICAL CHARACTERISTICS



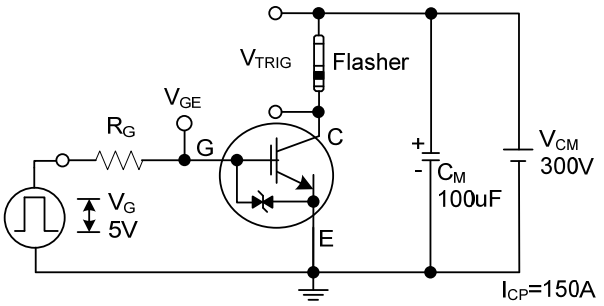

**Switching Test Circuit**




**Switching Waveforms**




**Gate Charge Test Circuit**




**Application Test Circuit**