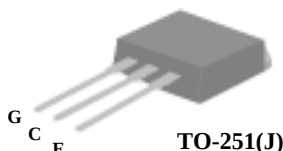
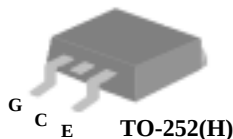


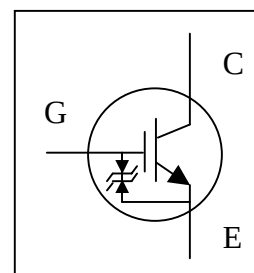


## Description

- \* High Input Impedance
- \* High Pick Current Capability
- \* 4.5V Gate Drive
- \* Strobe Flash Applications



|           |      |
|-----------|------|
| $V_{CES}$ | 450V |
| $I_{CP}$  | 130A |



## Absolute Maximum Ratings

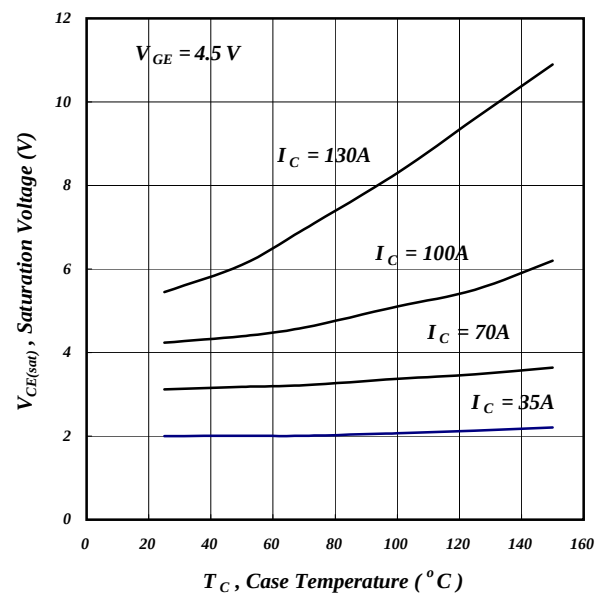
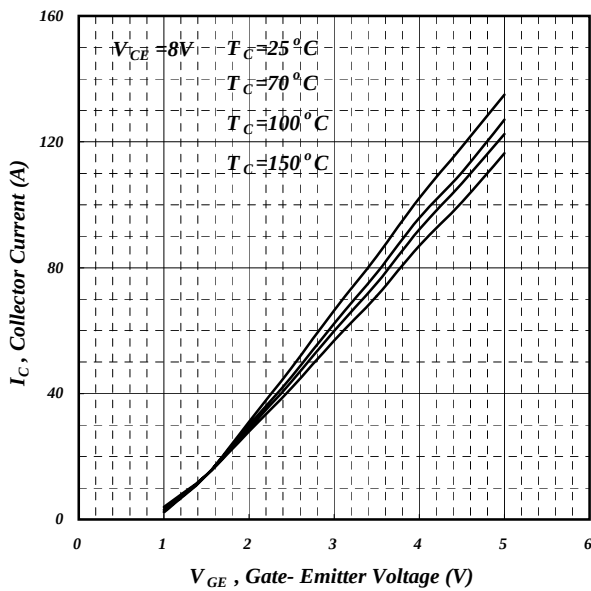
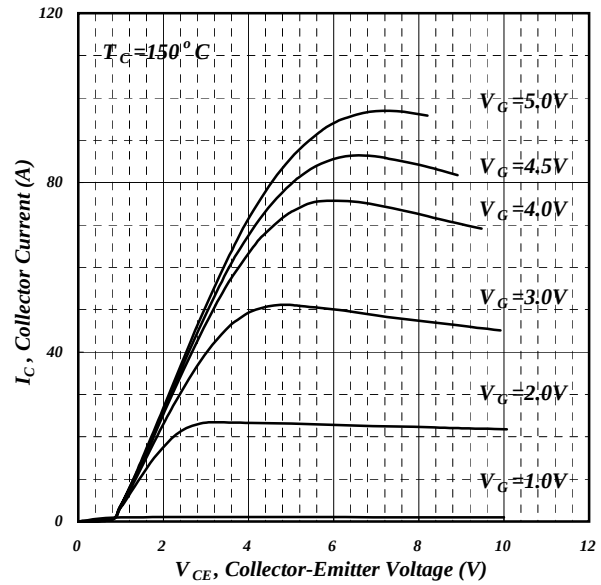
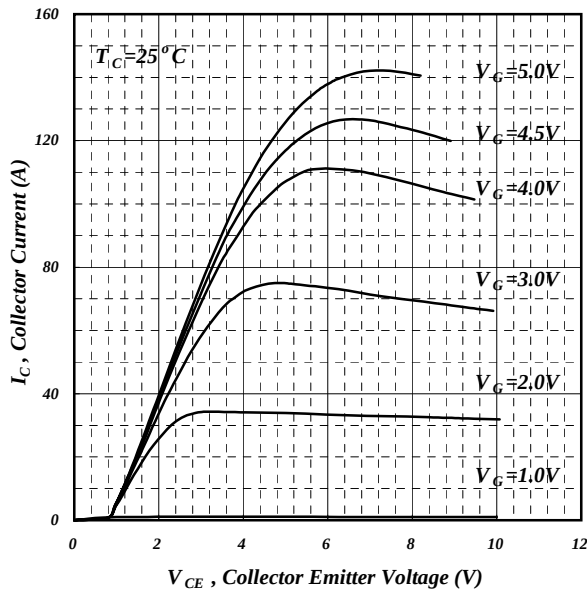
| Symbol                     | Parameter                            | Rating     | Units            |
|----------------------------|--------------------------------------|------------|------------------|
| $V_{CES}$                  | Collector-Emitter Voltage            | 450        | V                |
| $V_{GE}$                   | Gate-Emitter Voltage                 | $\pm 6$    | V                |
| $I_{GEP}$                  | Pulsed Gate-Emitter Voltage          | $\pm 8$    | V                |
| $I_{CP}$                   | Pulsed Collector Current             | 130        | A                |
| $P_D@T_C=25^\circ\text{C}$ | Maximum Power Dissipation            | 20         | W                |
| $T_{STG}$                  | Storage Temperature Range            | -55 to 150 | $^\circ\text{C}$ |
| $T_J$                      | Operating Junction Temperature Range | -55 to 150 | $^\circ\text{C}$ |

## Electrical Characteristics@ $T_J=25^\circ\text{C}$ (unless otherwise specified)

| Symbol        | Parameter                                                    | Test Conditions                                   | Min. | Typ. | Max. | Units              |
|---------------|--------------------------------------------------------------|---------------------------------------------------|------|------|------|--------------------|
| $I_{GES}$     | Gate-Emitter Leakage Current                                 | $V_{GE}=6\text{V}, V_{CE}=0\text{V}$              | -    | -    | 10   | $\mu\text{A}$      |
| $I_{CES}$     | Collector-Emitter Leakage Current ( $T_J=25^\circ\text{C}$ ) | $V_{CE}=450\text{V}, V_{GE}=0\text{V}$            | -    | -    | 10   | $\mu\text{A}$      |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage                         | $V_{GE}=4.5\text{V}, I_{CP}=130\text{A}$ (Pulsed) | -    | 5    | 8    | V                  |
| $V_{GE(th)}$  | Gate Threshold Voltage                                       | $V_{CE}=V_{GE}, I_C=250\mu\text{A}$               | -    | -    | 1.2  | V                  |
| $Q_g$         | Total Gate Charge                                            | $I_C=40\text{A}$                                  | -    | 51   | -    | nC                 |
| $Q_{ge}$      | Gate-Emitter Charge                                          | $V_{CE}=300\text{V}$                              | -    | 2    | -    | nC                 |
| $Q_{gc}$      | Gate-Collector Charge                                        | $V_{GE}=5\text{V}$                                | -    | 5.4  | -    | nC                 |
| $t_{d(on)}$   | Turn-on Delay Time                                           | $V_{CC}=200\text{V}$                              | -    | 5.5  | -    | ns                 |
| $t_r$         | Rise Time                                                    | $I_C=40\text{A}$                                  | -    | 72   | -    | ns                 |
| $t_{d(off)}$  | Turn-off Delay Time                                          | $R_G=25\Omega$                                    | -    | 640  | -    | ns                 |
| $t_f$         | Fall Time                                                    | $V_{GE}=5\text{V}$                                | -    | 2.6  | -    | $\mu\text{s}$      |
| $C_{ies}$     | Input Capacitance                                            | $V_{GE}=0\text{V}$                                | -    | 2095 | -    | pF                 |
| $C_{oes}$     | Output Capacitance                                           | $V_{CE}=25\text{V}$                               | -    | 145  | -    | pF                 |
| $C_{res}$     | Reverse Transfer Capacitance                                 | $f=1.0\text{MHz}$                                 | -    | 35   | -    | pF                 |
| $R_{thj-c}$   | Thermal Resistance Junction-Case                             |                                                   | -    | -    | 6    | $^\circ\text{C/W}$ |



## AP20G45EH/J



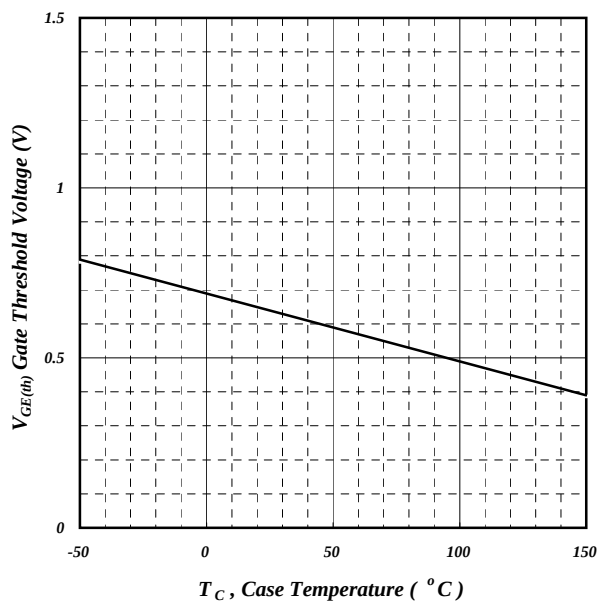


Fig 5. Gate-Emitter Cut-Off Voltage v.s. Case Temperature

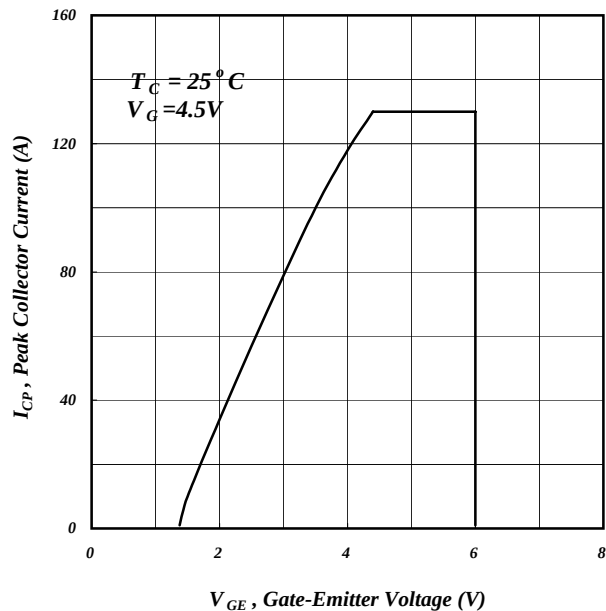


Fig 6. Safe Operation Area

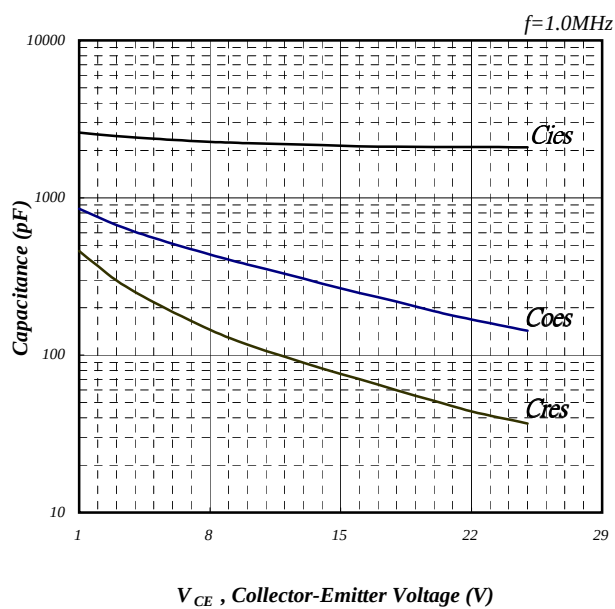


Fig 7. Collector v.s. Collector-Emitter Voltage

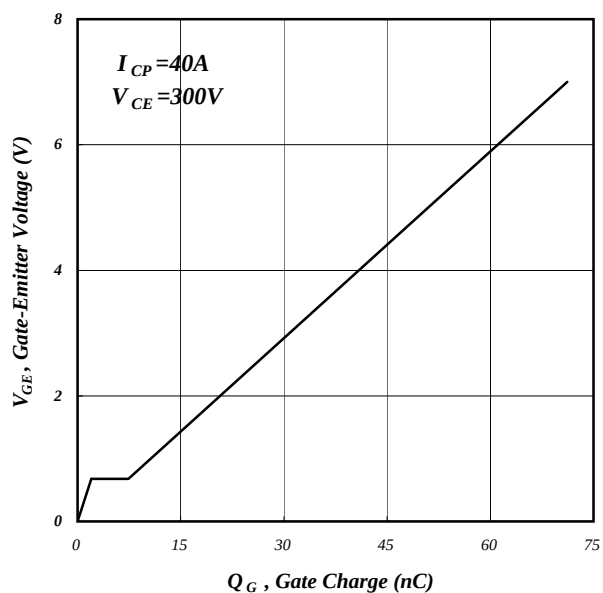


Fig 8. Gate Charge Waveform

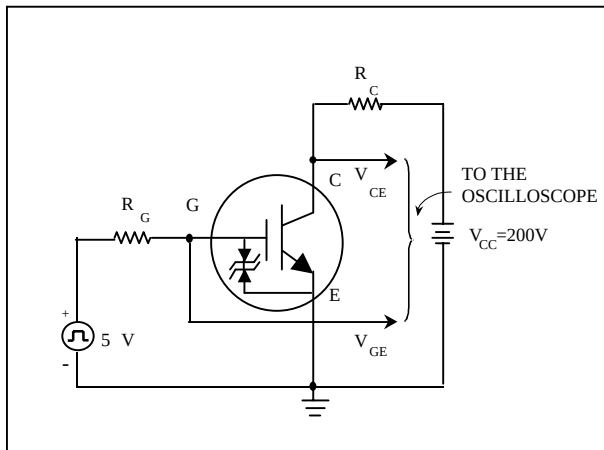


Fig 9. Switching Time Test Circuit

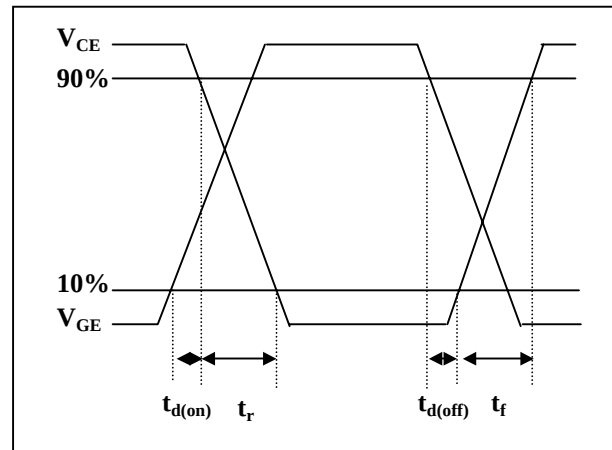


Fig 10. Switching Time Waveform

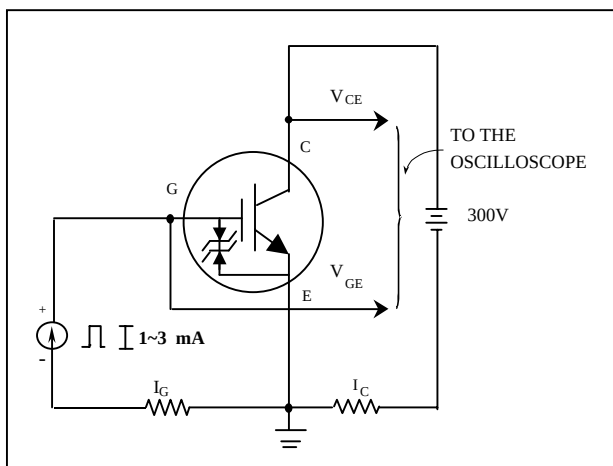


Fig 11. Gate Charge Test Circuit

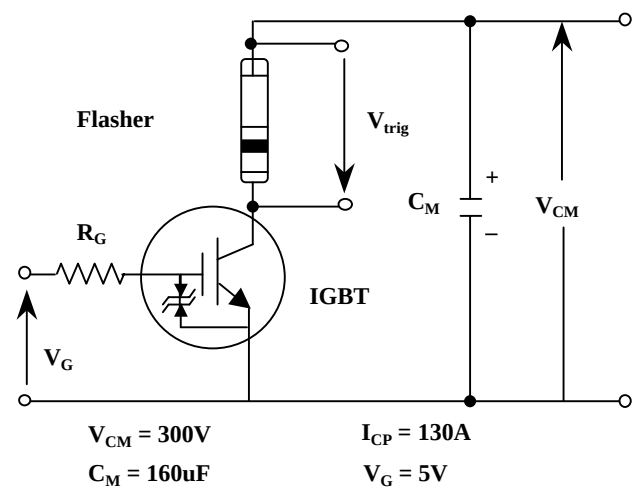


Fig 12. Application Test Circuit