

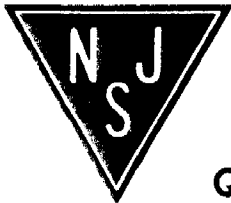
# New Jersey Semi-Conductor Products, Inc.

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GSRU15030  
GSRU15030A  
GSRU15035  
GSRU15035A  
GSRU15040  
GSRU15040A

| • High Speed  |   | • Off-line Power Supplies                    |                          | • Inverters/Converters |                                    |      |                    |               |
|---|---|--|--------------------------|------------------------|------------------------------------|------|--------------------|---------------|
| • Rugged  |   | • Switching Amplifiers                       |                          | • Switching Regulators |                                    |      |                    |               |
| <b>MAXIMUM RATINGS</b> ( $T_C = 25^\circ\text{C}$ unless otherwise noted.)  |   |  |                          |                        |                                    |      |                    |               |
| SYMBOL  | DESCRIPTION   | GSRU15030, A                                 | GSRU15035, A             | GSRU15040, A           | UNIT                               |      |                    |               |
| $V_{CB0}$   | Collector-Base Voltage  | 400  | 450                      | 500                    | Volts                              |      |                    |               |
| $V_{CE0}$   | Collector-Emitter Voltage   | 300  | 350                      | 400                    | Volts                              |      |                    |               |
| $V_{EB0}$   | Emitter-Base Voltage  | 8.0  |                          |                        | Volts                              |      |                    |               |
| $I_C$   | Collector Current—Continuous  | 20   |                          |                        | Amps                               |      |                    |               |
| $I_{CM}$  | Collector Current—Peak  | 30   |                          |                        | Amps                               |      |                    |               |
| $I_B$   | Base Current—Continuous   | 10   |                          |                        | Amps                               |      |                    |               |
| $P_D$   | Total Power Dissipation @ $T_C = 25^\circ\text{C}$  | 175  |                          |                        | Watts                              |      |                    |               |
| $T_{J(\text{oper})}$<br>$T_{stg}$   | Operating and Storage Junction Temperature Range  | -65 to +200                                  |                          |                        | $^\circ\text{C}$                   |      |                    |               |
| <b>ELECTRICAL CHARACTERISTICS</b> (Applies to all types unless otherwise noted.)  |   |  |                          |                        |                                    |      |                    |               |
| SYMBOL  | CONDITIONS  | PART NO.                                     | $T_C = 25^\circ\text{C}$ |                        | $T_C = 100^\circ\text{C}$ , A only |      | UNIT               |               |
|   |   |  | MIN.                     | MAX.                   | MIN.                               | MAX. |                    |               |
| <b>OFF-STATE</b>  |   |  |                          |                        |                                    |      |                    |               |
| $V_{CB0}$<br>$V_{CES}$<br>$V_{CEX}$   | $I_C = 1.0\text{mA}$<br>$V_{EB} = 1.5\text{V}$ ( $V_{CEX}$ Only)  | GSRU15030, A<br>GSRU15035, A<br>GSRU15040, A | 400<br>450<br>500        |                        |                                    |      | Volts              |               |
| $V_{CE0}$   | $I_C = 50\text{mA}$   | GSRU15030, A<br>GSRU15035, A<br>GSRU15040, A | 300<br>350<br>400        |                        |                                    |      | Volts              |               |
| $V_{EB0}$   | $I_E = 1.0\text{mA}$  |  | 8                        |                        |                                    |      | Volts              |               |
| $I_{CEX}$   | $V_{CE} = 80\%$ of Rated $V_{CB0}$ , $V_{EB} = 1.5\text{V}$   |  |                          | 10                     |                                    | 100  | $\mu\text{A}$      |               |
| $I_{EBO}$   | $V_{EB} = 5.0\text{V}$  |  |                          | 10                     |                                    |      | $\mu\text{A}$      |               |
| <b>ON-STATE</b>   |   |  |                          |                        |                                    |      |                    |               |
| $h_{FE}$  | $V_{CE} = 5.0\text{V}$ , $I_C = 15\text{A}^+$   |  | 10                       |                        |                                    |      |                    |               |
| $V_{CE(\text{sat})}$  | $I_C = 15\text{A}$ , $I_B = 3\text{A}^+$  |  |                          | 1.0                    |                                    | 1.0  | Volts              |               |
| $V_{BE(\text{sat})}$  | $I_C = 15\text{A}$ , $I_B = 3\text{A}^+$  |  |                          | 1.5                    |                                    |      | Volts              |               |
| <b>DYNAMIC</b>  |   |  |                          |                        |                                    |      |                    |               |
| $t_T$   | $V_{CE} = 10\text{V}$ , $I_C = 1\text{A}$ , $f = 10\text{MHz}$  |  | 15                       | 50                     |                                    |      | MHz                |               |
| $C_{\text{obs}}$  | $V_{CB} = 10\text{V}$ , $f = 1\text{MHz}$   |  | 200                      | 500                    |                                    |      | pF                 |               |
| $t_d$   | <b>Relative Load</b><br>$I_C = 15\text{A}$<br>$I_{B1} = I_{B2} = 3\text{A}$<br>$t_p = 60\mu\text{sec}$<br>$V_{CC} = 250\text{V}$                                  |  |                          | 0.07                   |                                    |      | $\mu\text{s}$      |               |
| $t_r$   |   |  |                          | 0.40                   |                                    |      | $\mu\text{s}$      |               |
| $t_s$   |   |  |                          |                        | 2.20                               |      |                    | $\mu\text{s}$ |
| $t_f$   |   |  |                          |                        | 0.20                               |      |                    | $\mu\text{s}$ |
| $t_{sd}(t_f)$   |   |  |                          |                        | 1.50                               |      | 2.00               | $\mu\text{s}$ |
| $t_{sv}$  | <b>Inductive Load</b><br>$I_C = 15\text{A}$<br>$I_{B1} = I_{B2} = 3\text{A}$<br>$t_p = 60\mu\text{s}$<br>$V_{\text{CLAMP}} = 250\text{V}$<br>$L = 100\mu\text{H}$ |  |                          | 2.40                   |                                    | 3.00 | $\mu\text{s}$      |               |
| $t_{rv}$  |   |  |                          | 0.35                   |                                    | 0.40 | $\mu\text{s}$      |               |
| $t_{th}$  |   |  |                          |                        | 0.12                               |      | 0.20               | $\mu\text{s}$ |
| $t_c$   |   |  |                          |                        | 0.40                               |      | 0.60               | $\mu\text{s}$ |
| $t_c$   |   |  |                          |                        | 0.40                               |      | 0.60               | $\mu\text{s}$ |
| <b>THERMAL</b>  |   |  |                          |                        |                                    |      |                    |               |
| $R_{\theta JC}$   | $V_{CE} = 10\text{V}$ , $I_C = 10\text{A}$  |  |                          | 1.0                    |                                    |      | $^\circ\text{C/W}$ |               |
| † Pulse measurement conditions: Length: 300 $\mu\text{sec}$ , Duty Cycle: 2% (measured using separate current carrying and voltage sensing leads) |   |  |                          |                        |                                    |      |                    |               |



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