



MJD122-1 / MJD122T4 MJD127-1 / MJD127T4

COMPLEMENTARY POWER DARLINGTON TRANSISTORS

| Ordering Code | Marking | Package | Shipment |
|---------------|---------|---------------|-------------|
| MJD122T4 | MJD122 | TO-252 (DPAK) | Tape & Reel |
| MJD122-1 | MJD122 | TO-251 (IPAK) | Tube |
| MJD127T4 | MJD127 | TO-252 (DPAK) | Tape & Reel |
| MJD127-1 | MJD127 | TO-251 (IPAK) | Tube |

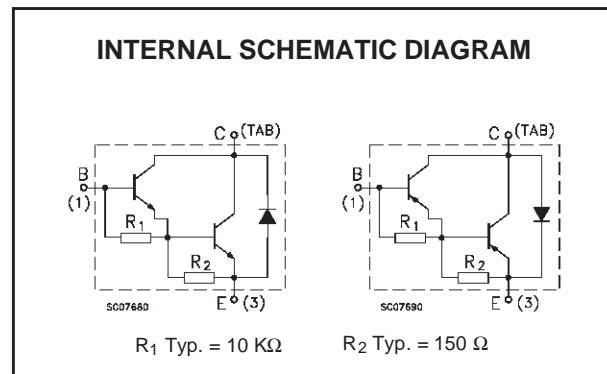
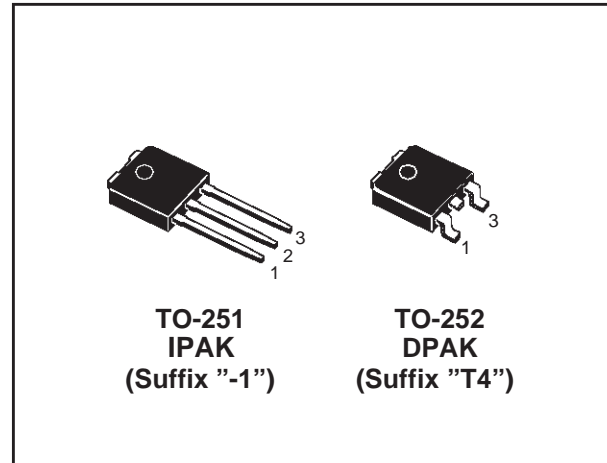
- STMicroelectronics PREFERRED SALESTYPES
- LOW BASE-DRIVE REQUIREMENTS
- INTEGRATED ANTIPARALLEL COLLECTOR-EMITTER DIODE
- THROUGH HOLE TO-251 (IPAK) POWER PACKAGE IN TUBE (SUFFIX "-1")
- SURFACE MOUNTING TO-252 (DPAK) POWER PACKAGE IN TAPE & REEL (SUFFIX "T4")
- ELECTRICALLY SIMILAR TO TIP122 AND TIP127

APPLICATIONS:

- GENERAL PURPOSE SWITCHING AND AMPLIFIER

DESCRIPTION

The MJD122 and MJD127 form complementary NPN - PNP pair. They are manufactured using Epitaxial Base technology for cost-effective performance.



ABSOLUTE MAXIMUM RATINGS

| Symbol | Parameter | Value | | Unit |
|-----------|---|-------|------------|------|
| | | NPN | MJD122 | |
| | | PNP | MJD127 | |
| V_{CBO} | Collector-Base Voltage ($I_E = 0$) | | 100 | V |
| V_{CEO} | Collector-Emitter Voltage ($I_B = 0$) | | 100 | V |
| V_{EBO} | Emitter-Base Voltage ($I_C = 0$) | | 5 | V |
| I_C | Collector Current | | 5 | A |
| I_{CM} | Collector Peak Current ($t_p < 5$ ms) | | 8 | A |
| I_B | Base Current | | 0.1 | A |
| P_{tot} | Total Dissipation at $T_c = 25$ °C | | 20 | W |
| T_{stg} | Storage Temperature | | -65 to 150 | °C |
| T_j | Max. Operating Junction Temperature | | 150 | °C |

For PNP types voltage and current values are negative.

THERMAL DATA

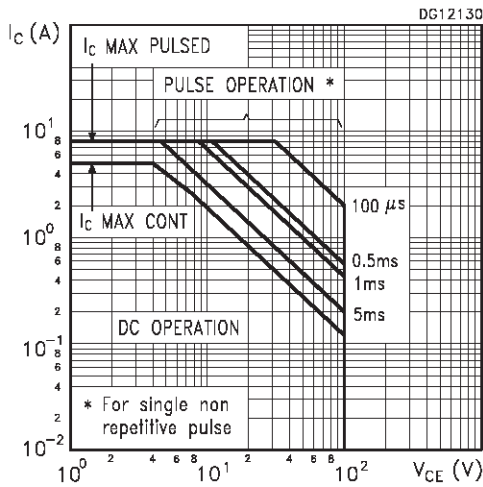
| | | | | |
|-----------------------|-------------------------------------|-----|------|------|
| R _{thj-case} | Thermal Resistance Junction-case | Max | 6.25 | °C/W |
| R _{thj-amb} | Thermal Resistance Junction-ambient | Max | 100 | °C/W |

ELECTRICAL CHARACTERISTICS (T_j = 25 °C unless otherwise specified)

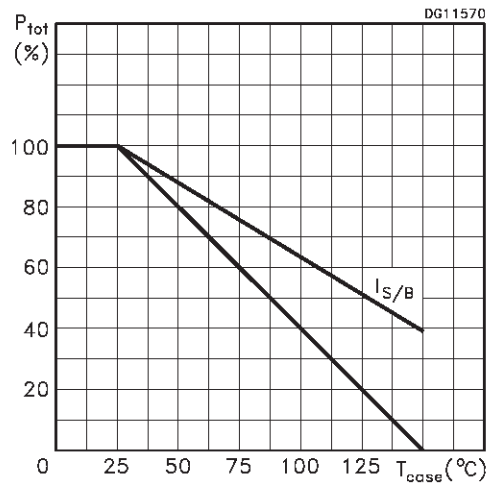
| Symbol | Parameter | Test Conditions | Min. | Typ. | Max. | Unit |
|-------------------------|---|--|-------------|------|-----------|----------|
| I _{CBO} | Collector Cut-off Current (I _E = 0) | V _{CB} = 100 V | | | 10 | μA |
| I _{CEO} | Collector Cut-off Current (I _B = 0) | V _{CE} = 50 V | | | 10 | μA |
| I _{CEX} | Collector Cut-off Current (V _{BE} = -1.5 V) | V _{CE} = 100 V V _{CE} = 100 V T _j = 125 °C | | | 10 500 | μA μA |
| I _{EBO} | Emitter Cut-off Current (I _C = 0) | V _{EB} = 5 V | | | 2 | mA |
| V _{CEO(sus)} * | Collector-Emitter Sustaining Voltage (I _B = 0) | I _C = 30 mA | 100 | | | V |
| V _{CE(sat)} * | Collector-Emitter Saturation Voltage | I _C = 4 A I _B = 16 mA I _C = 8 A I _B = 80 mA | | | 2 4 | V V |
| V _{BE(sat)} * | Base-Emitter Saturation Voltage | I _C = 8 A I _B = 80 mA | | | 4.5 | V |
| V _{BE(on)} * | Base-Emitter On Voltage | I _C = 4 A V _{CE} = 4 V | | | 2.8 | V |
| h _{FE} * | DC Current Gain | I _C = 4 A V _{CE} = 4 V I _C = 8 A V _{CE} = 4 V | 1000 100 | | 12000 | |

* Pulsed: Pulse duration = 300 μs, duty cycle ≤ 2 %.
For PNP types voltage and current values are negative.

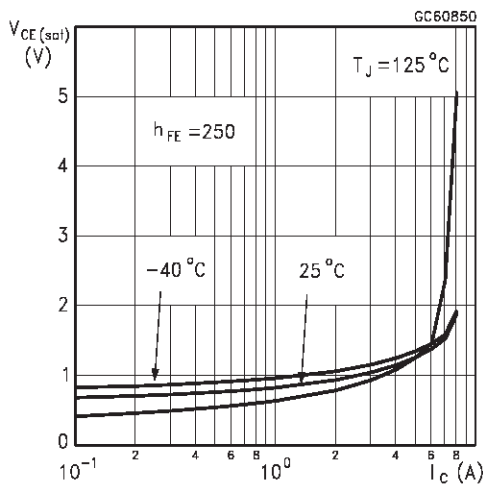
Safe Operating Area



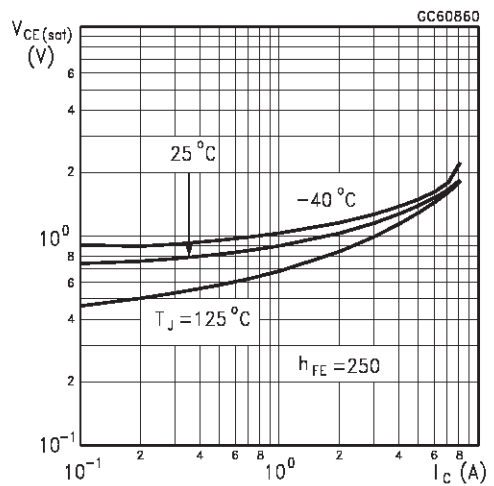
Derating Curve



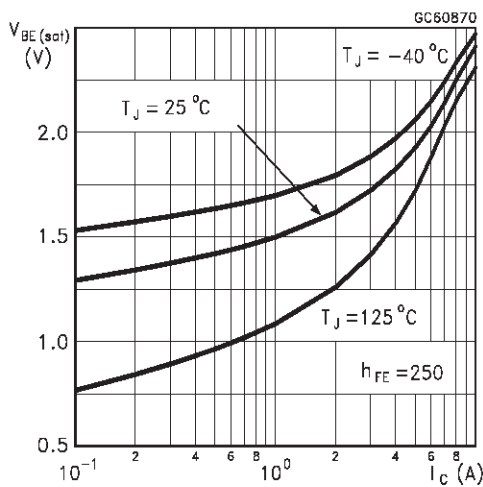
Collector-Emitter Saturation Voltage (NPN type)



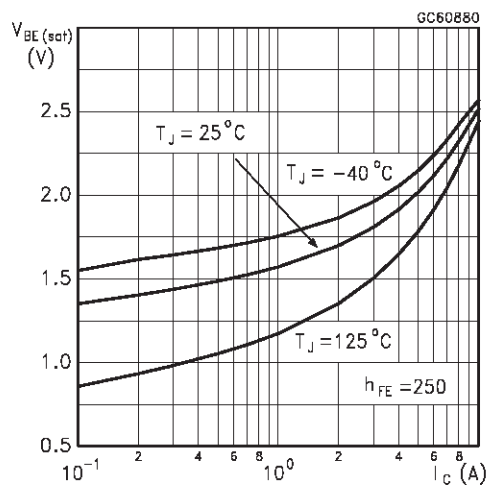
Collector-Emitter Saturation Voltage (PNP type)



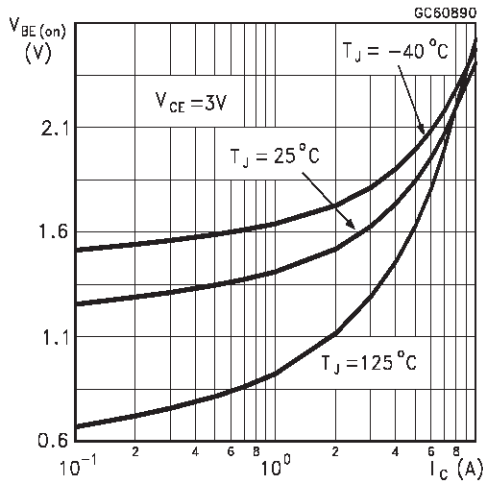
Base-Emitter Saturation Voltage (NPN type)



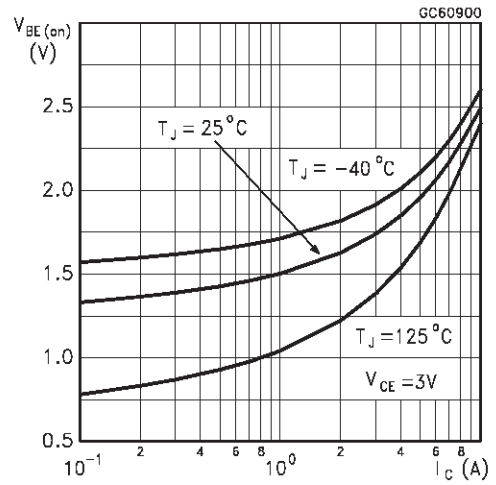
Base-Emitter Saturation Voltage (PNP type)



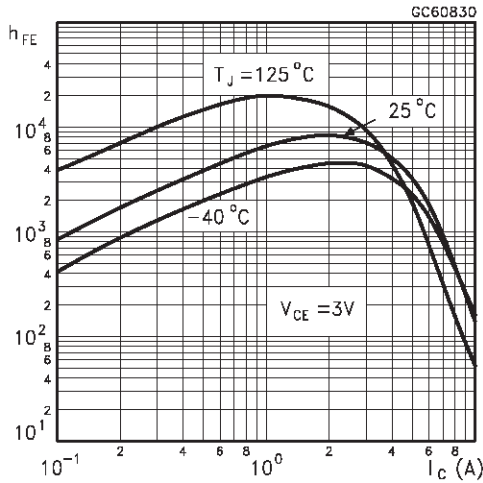
Base-Emitter On Voltage (NPN type)



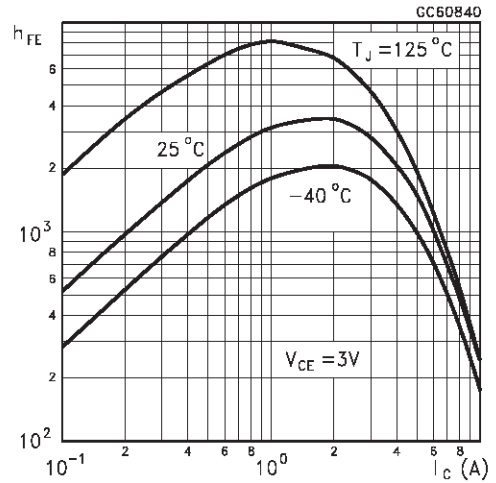
Base-Emitter On Voltage (PNP type)



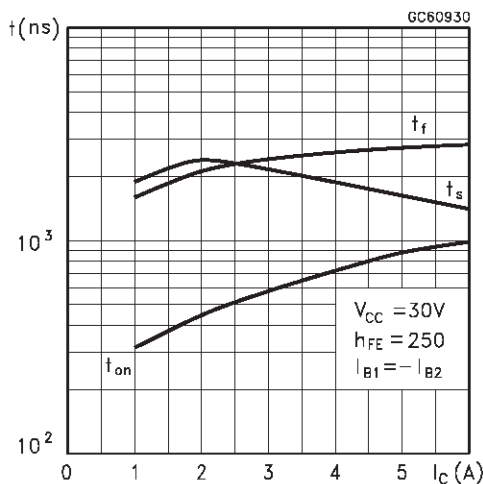
DC Current Gain (NPN type)



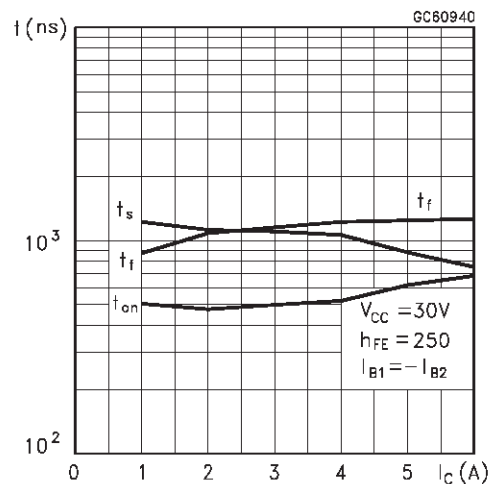
DC Current Gain (PNP type)



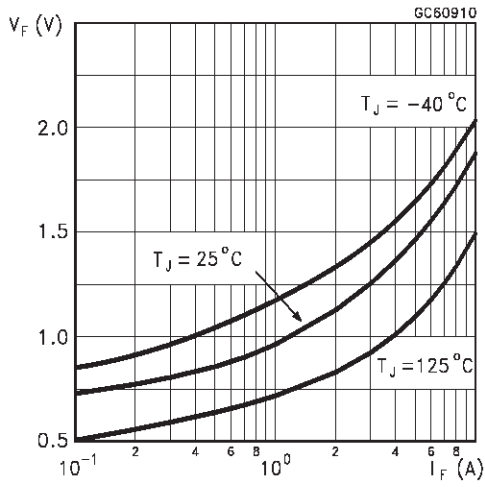
Switching Times Resistive Load (NPN type)



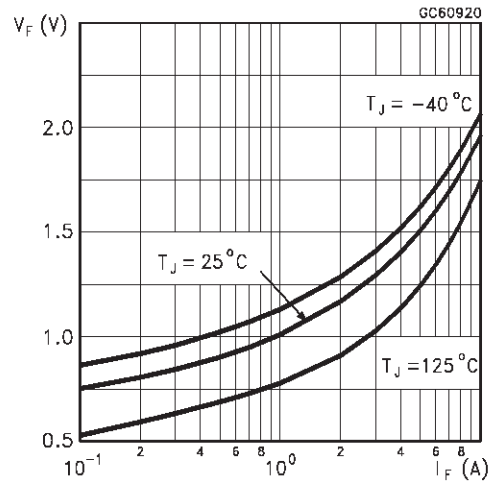
Switching Times Resistive Load (PNP type)



Freewheel Diode Forward Voltage (NPN type)

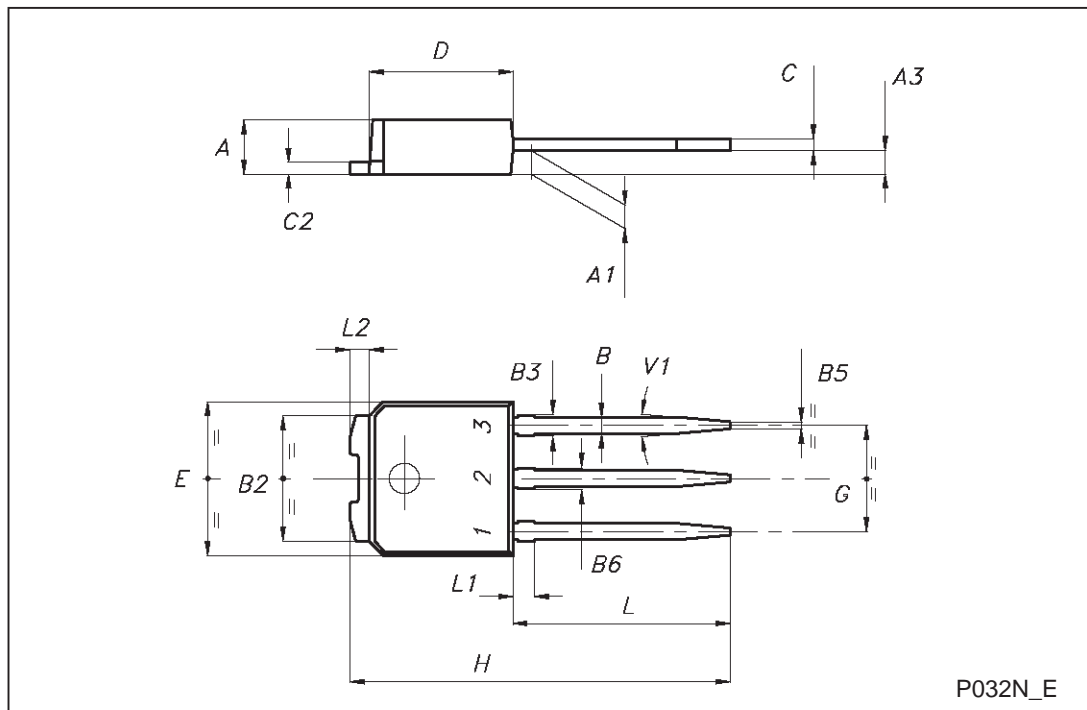


Freewheel Diode Forward Voltage (PNP type)



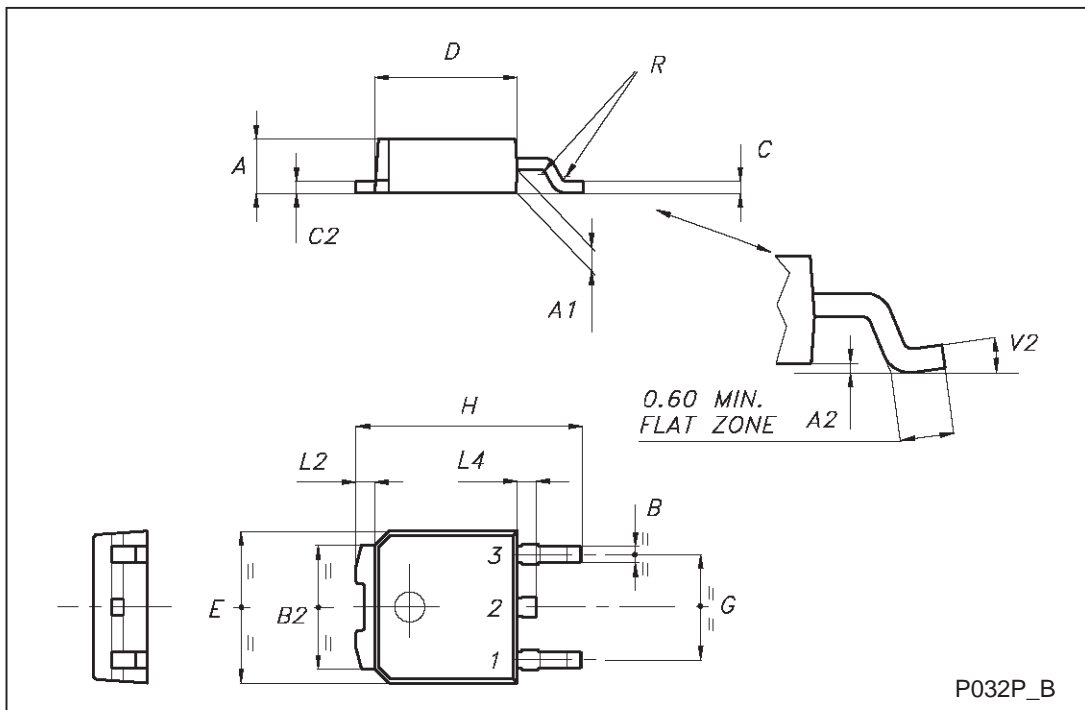
TO-251 (IPAK) MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|-------|------|-------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 2.20 | | 2.40 | 0.087 | | 0.094 |
| A1 | 0.90 | | 1.10 | 0.035 | | 0.043 |
| A3 | 0.70 | | 1.30 | 0.028 | | 0.051 |
| B | 0.64 | | 0.90 | 0.025 | | 0.035 |
| B2 | 5.20 | | 5.40 | 0.204 | | 0.213 |
| B3 | | | 0.85 | | | 0.033 |
| B5 | | 0.30 | | | 0.012 | |
| B6 | | | 0.95 | | | 0.037 |
| C | 0.45 | | 0.60 | 0.018 | | 0.024 |
| C2 | 0.48 | | 0.60 | 0.019 | | 0.024 |
| D | 6.00 | | 6.20 | 0.237 | | 0.244 |
| E | 6.40 | | 6.60 | 0.252 | | 0.260 |
| G | 4.40 | | 4.60 | 0.173 | | 0.181 |
| H | 15.90 | | 16.30 | 0.626 | | 0.642 |
| L | 9.00 | | 9.40 | 0.354 | | 0.370 |
| L1 | 0.80 | | 1.20 | 0.031 | | 0.047 |
| L2 | | 0.80 | 1.00 | | 0.031 | 0.039 |
| V1 | | 10° | | | 10° | |



TO-252 (DPAK) MECHANICAL DATA

| DIM. | mm | | | inch | | |
|------|------|------|-------|-------|-------|-------|
| | MIN. | TYP. | MAX. | MIN. | TYP. | MAX. |
| A | 2.20 | | 2.40 | 0.087 | | 0.094 |
| A1 | 0.90 | | 1.10 | 0.035 | | 0.043 |
| A2 | 0.03 | | 0.23 | 0.001 | | 0.009 |
| B | 0.64 | | 0.90 | 0.025 | | 0.035 |
| B2 | 5.20 | | 5.40 | 0.204 | | 0.213 |
| C | 0.45 | | 0.60 | 0.018 | | 0.024 |
| C2 | 0.48 | | 0.60 | 0.019 | | 0.024 |
| D | 6.00 | | 6.20 | 0.236 | | 0.244 |
| E | 6.40 | | 6.60 | 0.252 | | 0.260 |
| G | 4.40 | | 4.60 | 0.173 | | 0.181 |
| H | 9.35 | | 10.10 | 0.368 | | 0.398 |
| L2 | | 0.8 | | | 0.031 | |
| L4 | 0.60 | | 1.00 | 0.024 | | 0.039 |
| V2 | 0° | | 8° | 0° | | 0° |



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