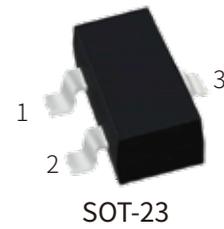


FEATURES

- Collector currents up to 600 mA
- Meet AEC-Q101 Requirements



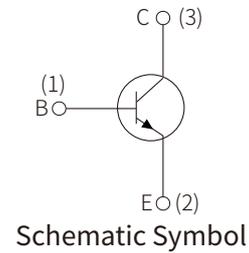
APPLICATIONS

- General purpose amplifier, Meet the stringent requirements of automotive applications



APPROVALS

| | |
|-------------|------------------------------------|
| RoHS | Compliance with 2011/65/EU |
| HF | Compliance with IEC61249-2-21:2003 |



MAXIMUM RATINGS (T_A=25°C)

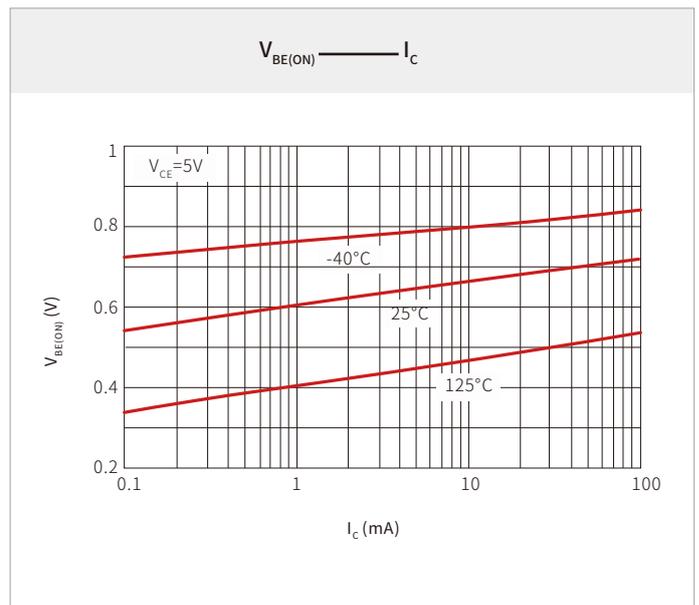
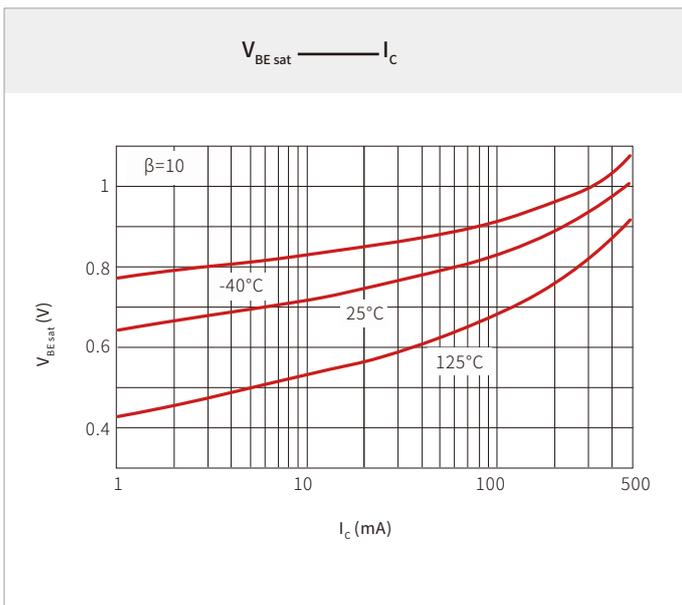
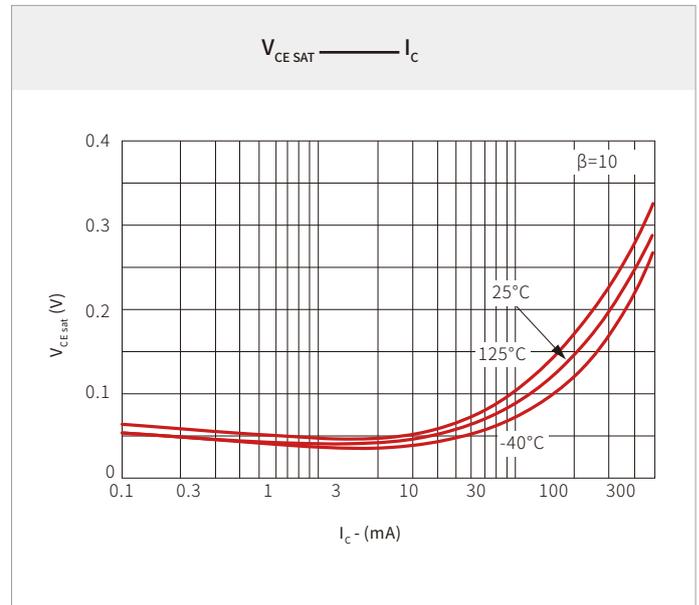
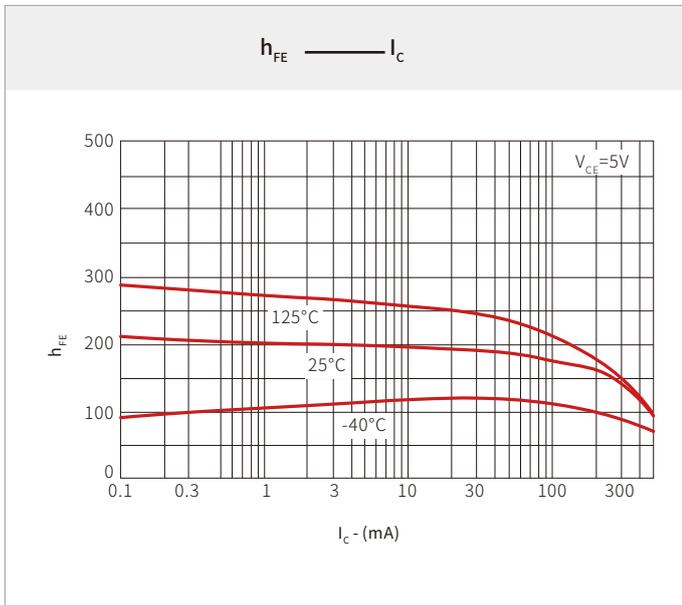
| Parameter | Symbol | Value | Unit |
|-----------------------------|------------------|----------|------|
| Collector-Base Voltage | V _{CBO} | 75 | V |
| Collector-Emitter Voltage | V _{CEO} | 40 | |
| Emitter-Base Voltage | V _{EBO} | 6.0 | |
| Collector Current | I _C | 600 | mA |
| Collector Power Dissipation | P _C | 350 | mW |
| Junction Temperature | T _J | 150 | °C |
| Storage Temperature | T _{STG} | -55~+150 | °C |

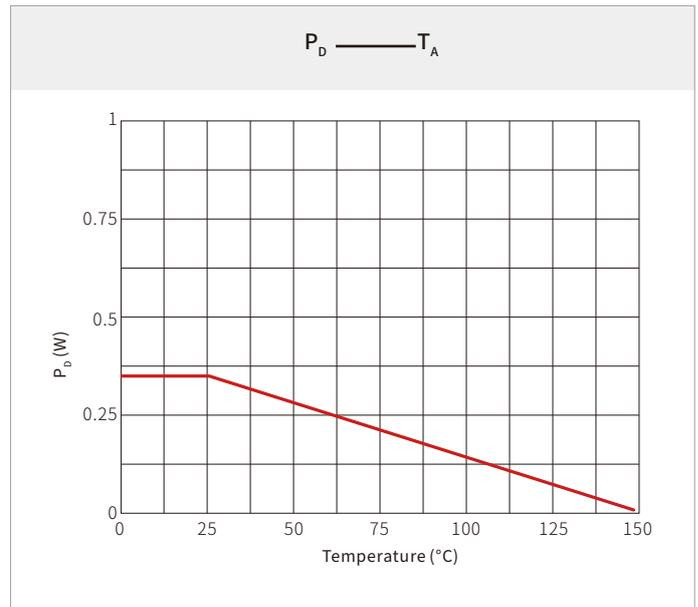
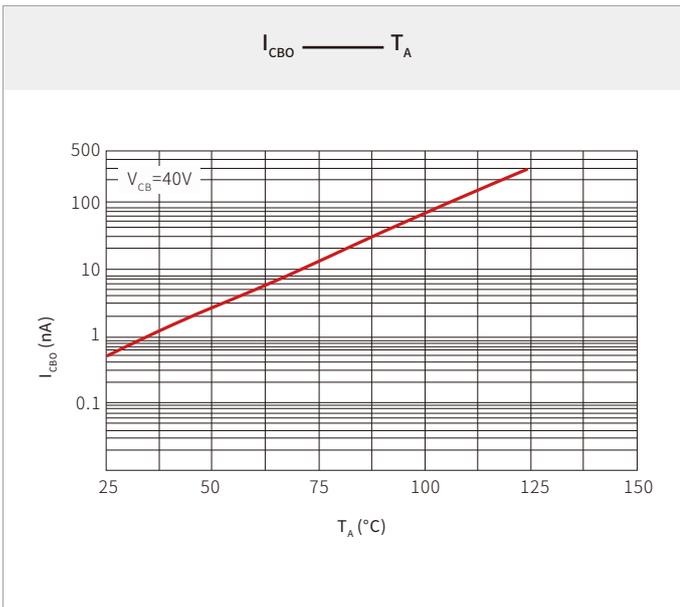
ELECTRICAL CHARACTERISTICS (T_A=25°C)

| Parameter | Symbol | Test Conditions | Min. | Typ. | Max. | Unit |
|--------------------------------------|-----------------------|--|------|------|------|------|
| Collector-base breakdown voltage | V _{CBO} | I _C =100μA, I _E =0 | 75 | | | V |
| Collector-emitter breakdown voltage | V _{CEO} | I _C =10mA, I _B =0 | 40 | | | |
| Emitter-base breakdown voltage | V _{EBO} | I _E =10μA, I _C =0 | 6.0 | | | |
| Emitter cut-off current | I _{CBO} | V _{CB} =60V, I _E =0 | | | 0.01 | μA |
| Emitter cut-off current | I _{EBO} | V _{EB} =5.0V, I _C =0 | | | 0.1 | |
| DC current gain | h _{FE(1)} | V _{CE} =10V, I _C =150mA* | 100 | | 300 | |
| Collector-emitter saturation voltage | V _{CE(sat1)} | I _C =150mA, I _B =15mA | | | 0.3 | V |
| | V _{CE(sat2)} | I _C =500mA, I _B =50mA | | | 1.0 | V |
| Base-emitter saturation voltage | V _{BE(sat1)} | I _C =150mA, I _B =15mA | 0.6 | | 1.2 | V |
| | V _{BE(sat2)} | I _C =500mA, I _B =50mA | | | 2.0 | V |
| Output Capacitance | C _{ob} | V _{CB} =10V, I _E =0, f=1.0MHz | | | 8.0 | pF |
| Transition frequency | f _T | V _{CE} =20V, I _C =20mA, f=100MHz | 300 | | | MHz |
| Turn-On Time | t _{on} | V _{CC} =30V, V _{BE} =-0.5V, I _C =150mA, I _{B1} =15mA | | | 35 | ns |
| Turn-Off Time | t _{off} | V _{CC} =30V, I _C =150mA, I _{B1} =I _{B2} =15mA | | | 285 | ns |

*Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

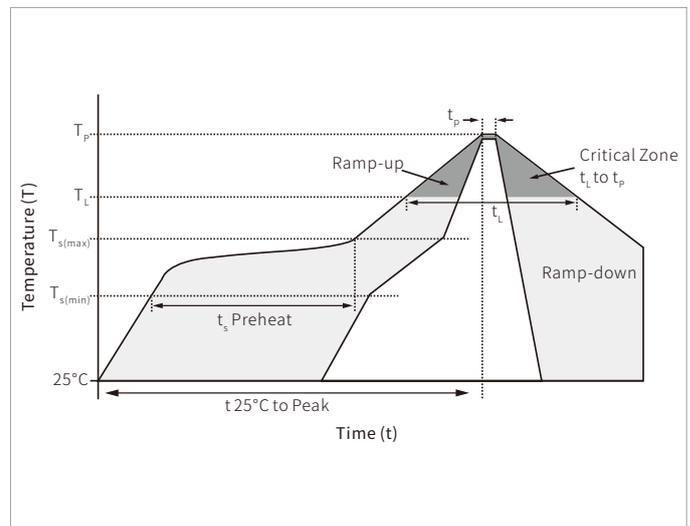
TYPICAL CHARACTERISTICS



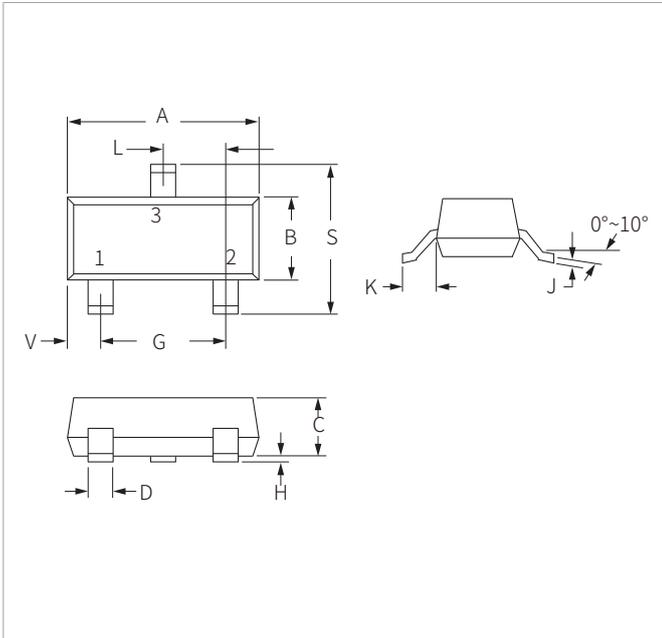


SOLDERING PARAMETERS

| Reflow Condition | | Lead-free assembly |
|--|----------------------------------|--------------------|
| Pre Heat | Temperature Max ($T_{s(min)}$) | 150°C |
| | Temperature Max ($T_{s(max)}$) | 200°C |
| | Time (min to max) (t_s) | 60 – 180 secs |
| Average ramp up rate (Liquidus Temp (T_L) to peak) | | 3°C/second max |
| $T_{s(max)}$ to T_L - Ramp-up Rate | | 3°C/second max |
| Reflow | Temperature (T_L) (Liquidus) | 217°C |
| | Time (min to max) (t_L) | 60 – 150 seconds |
| Peak Temperature (T_p) | | 260°C |
| Time within 5°C of actual peak Temperature (t_p) | | 20 – 40 seconds |
| Ramp-down Rate | | 6°C/second max |
| Time 25°C to peak Temperature (T_p) | | 8 minutes max. |
| Do not exceed | | 260°C |

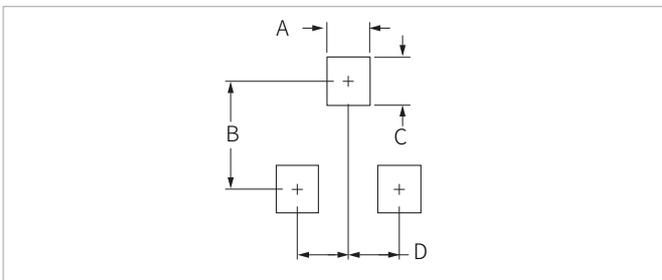


SOT-23 PACKAGE INFORMATION



| Ref. | Millimeters | | Inches | |
|------|-------------|-------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 2.80 | 3.05 | 0.110 | 0.120 |
| B | 1.20 | 1.40 | 0.047 | 0.055 |
| C | 0.90 | 1.15 | 0.035 | 0.045 |
| D | 0.37 | 0.50 | 0.015 | 0.020 |
| G | 1.75 | 2.05 | 0.069 | 0.081 |
| H | 0.01 | 0.100 | 0.001 | 0.004 |
| J | 0.085 | 0.180 | 0.003 | 0.007 |
| K | 0.35 | 0.69 | 0.014 | 0.029 |
| L | 0.89 | 1.02 | 0.035 | 0.040 |
| S | 2.10 | 2.65 | 0.083 | 0.104 |
| V | 0.45 | 0.60 | 0.018 | 0.024 |

RECOMMENDED PAD LAYOUT DIMENSIONS



| Ref. | Millimeters | | Inches | |
|------|-------------|------|--------|-------|
| | Min. | Max. | Min. | Max. |
| A | 0.71 | 0.97 | 0.028 | 0.038 |
| B | 1.88 | 2.13 | 0.074 | 0.084 |
| C | 0.71 | 0.97 | 0.028 | 0.038 |
| D | 0.81 | 1.07 | 0.032 | 0.042 |

ORDERING INFORMATION

| Part Number | Component Package | QTY/Reel | Reel Size |
|-------------|-------------------|----------|-----------|
| MMBT2222AQ | SOT-23 | 3000PCS | 7" |

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