

Specifications are subject to change without notice.

DESCRIPTION

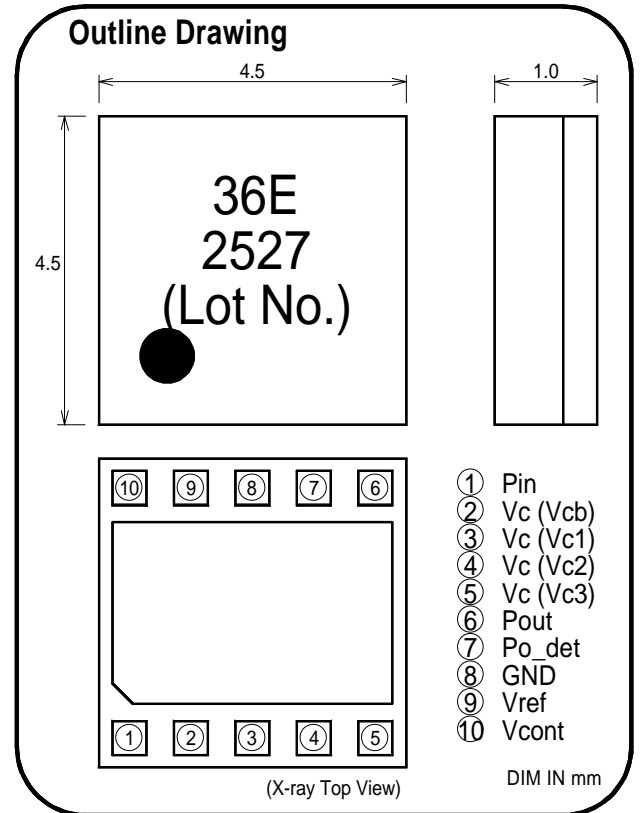
MGFS36E2527 is a GaAs RF amplifier designed for WiMAX CPE.

FEATURES

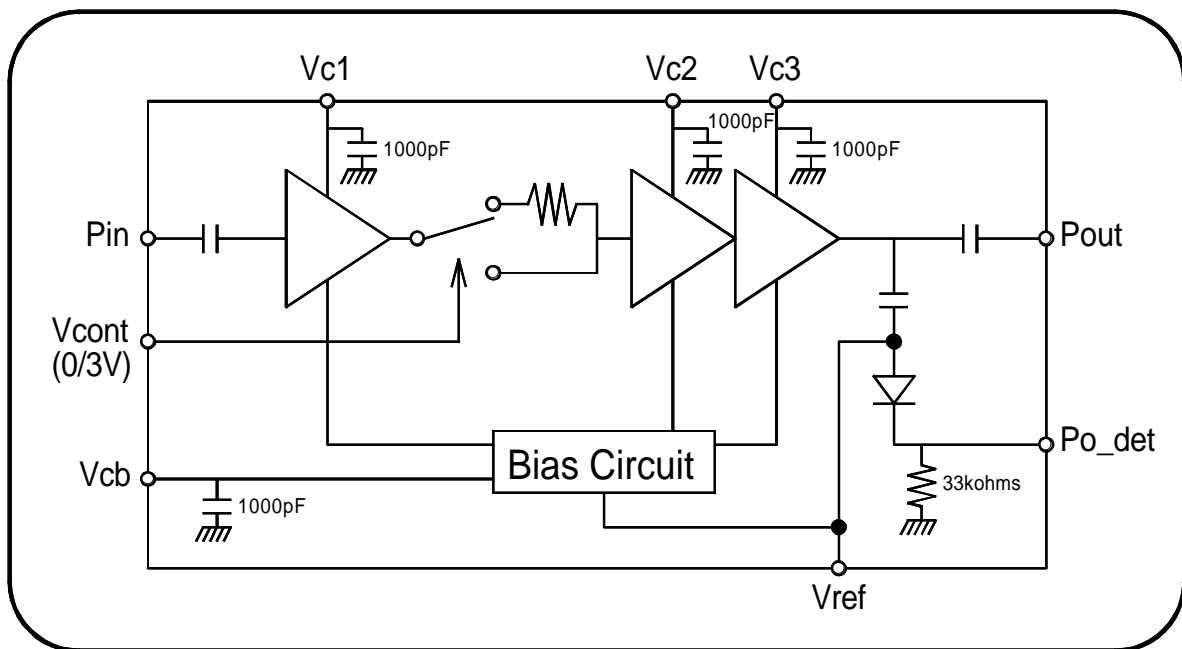
- InGaP HBT Device
- 6V Operation
- 27dBm Linear Output Power
- 33dB Linear Gain
- Integrated Output Power Detector
- Integrated 1-bit 19dB Step Attenuator
- 50ohms Matched
- Surface Mount Package
- RoHS Compliant Package

APPLICATIONS

IEEE802.16-2004, IEEE802.16e-2005



FUNCTIONAL BLOCK DIAGRAM



Mitsubishi Electric Corporation puts the maximum effort into making semiconductor products better and more reliable, but there is always the possibility that trouble may occur with them. Trouble with semiconductors may lead to personal injury, fire or property damage. Remember to give due consideration to safety when making your circuit designs, with appropriate measures such as (i)placement of substitutive, auxiliary, circuits, (ii)use of non-flammable material or (iii)prevention against any malfunction or mishap.

Specifications are subject to change without notice.

ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

| Symbol | Parameter | Conditions* | Value | Unit |
|----------------------|--------------------------|--------------|----------|------|
| Vc1, Vc2 Vc3, Vcb | Collector Supply Voltage | Pout≤27.0dBm | 8 | V |
| Vref | Reference Voltage | Pout≤27.0dBm | 3 | V |
| Vcont | ATT Control Voltage | Pout≤27.0dBm | 3.3 | V |
| Ic1 | Operation Current | Pout≤27.0dBm | 80 | mA |
| Ic2 | | | 250 | mA |
| Ic3 | | | 900 | mA |
| Pin | Input Power | Pout≤27.0dBm | 5 | dBm |
| - | Duty Cycle | Pout≤27.0dBm | 50 | % |
| Tc(op) | Operation Temperature | Pout≤27.0dBm | -30~+85 | °C |
| Tstg | Storage Temperature | - | -40~+125 | °C |

*NOTE : Zin=Zout=50Ω

Each maximum rating is guaranteed independently.

Please take care that MGFS36E2527 is operated under these conditions at the worst case on your terminal.

ELECTRICAL CHARACTERISTICS (Ta=25°C)

| Symbol | Parameter | Test Conditions* | Limits | | | Unit |
|--------|------------------------|-----------------------|--------|-----|-----|------|
| | | | Min | Typ | Max | |
| f | Frequency | - | 2.5 | | 2.7 | GHz |
| Gp | Gain | Vc=6V, Vref=2.85V | | 33 | | dB |
| ηt | Efficiency | Pout=27dBm | | 12 | | % |
| EVM | EVM | 64QAM OFDM Modulation | | 2.5 | | % |
| Vdet | Power Detector Voltage | Duty Cycle < 50% | | 2.0 | | V |
| ATT | Control Gain Step | Vcont=3V | | 19 | | dB |
| Ileak | Leakage Current | Vc=6V, Vref=0V | | | 10 | μA |

*NOTE : Zin=Zout=50Ω

ESD RATING - Class 1A (HBM)

MOISTURE SENSITIVITY LEVEL - Level 3

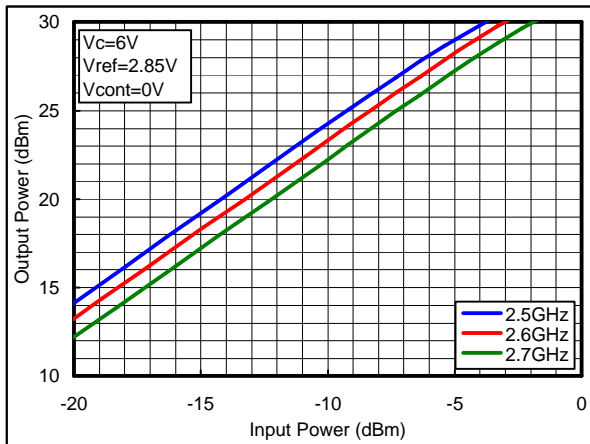
THERMAL RESISTANCE : 30°C/W

Specifications are subject to change without notice.

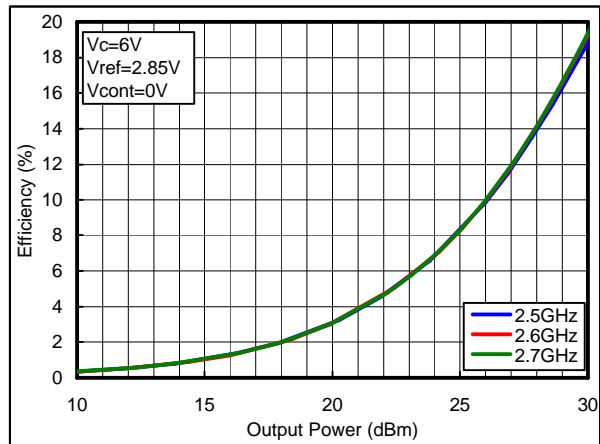
PERFORMANCE DATA

WiMAX OFDM 64QAM signal input. Ta=25degC.

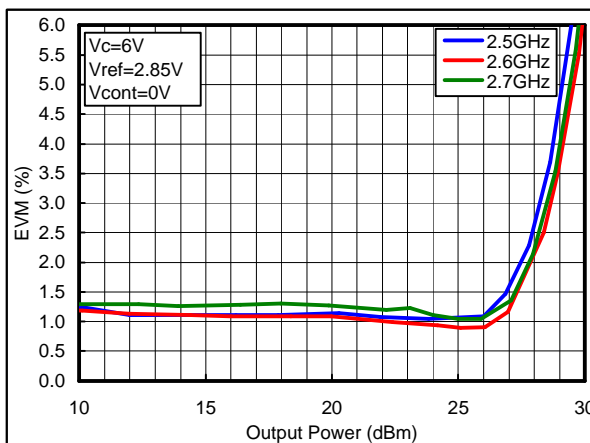
Output Power vs. Input Power



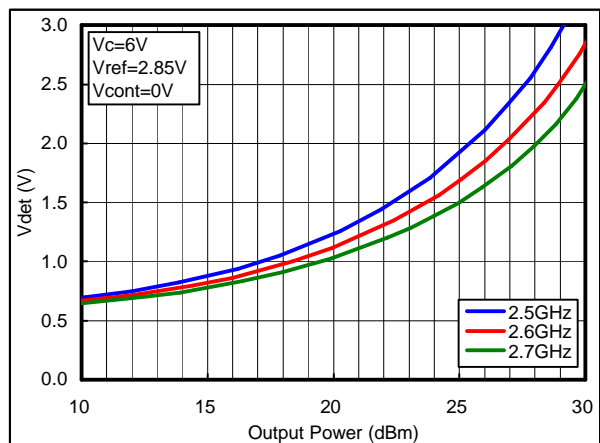
Efficiency vs. Output Power



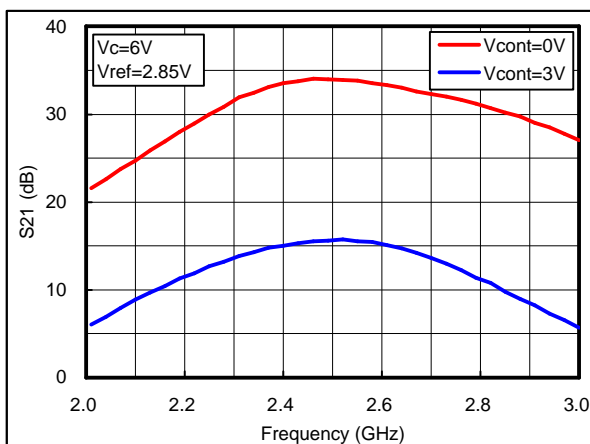
EVM vs. Output Power



Detector Voltage vs. Output Power



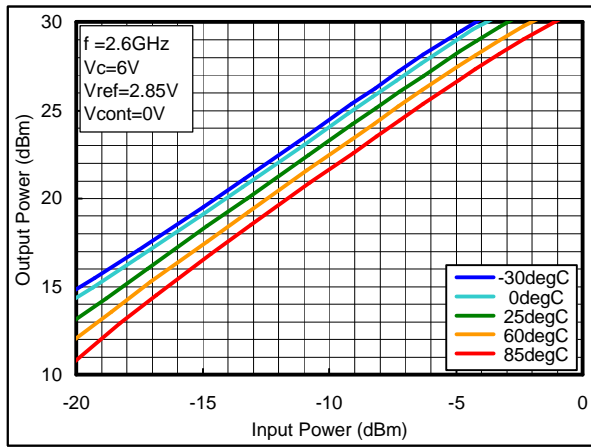
Attenuation Performance



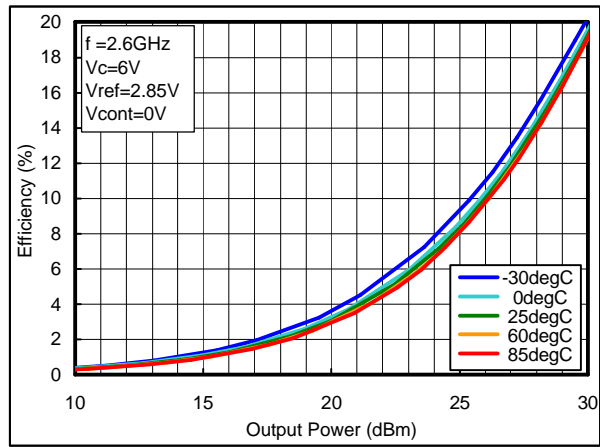
Specifications are subject to change without notice.

WiMAX OFDM 64QAM signal input.

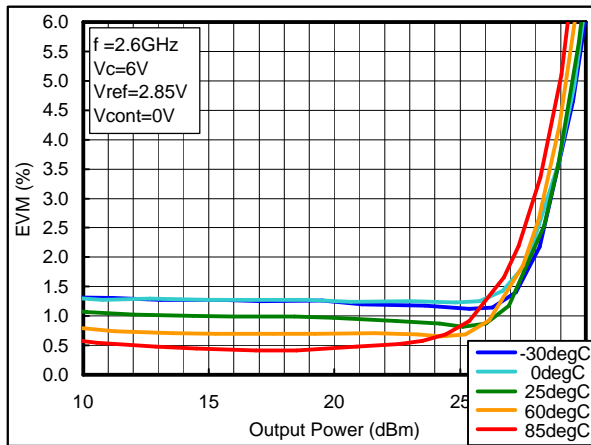
Output Power vs. Input Power



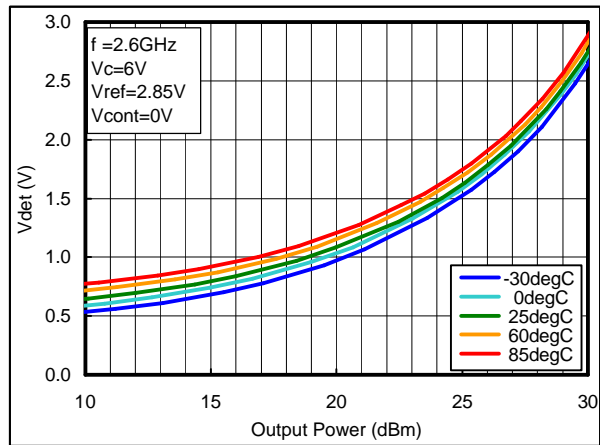
Efficiency vs. Output Power



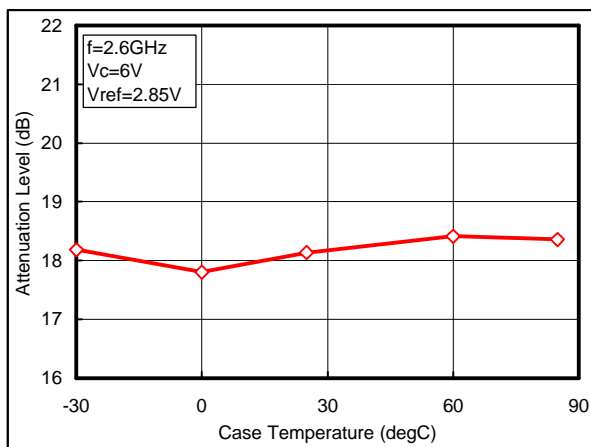
EVM vs. Output Power



Detector Voltage vs. Output Power



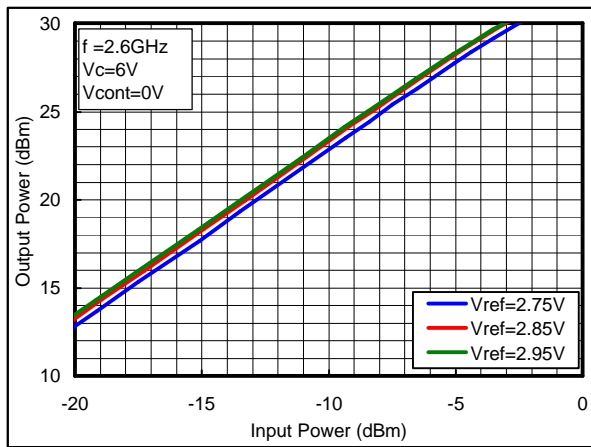
Attenuation Level



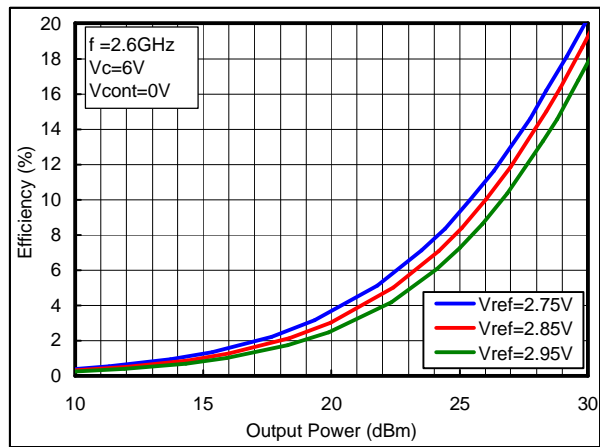
Specifications are subject to change without notice.

WiMAX OFDM 64QAM signal input. Ta=25degC.

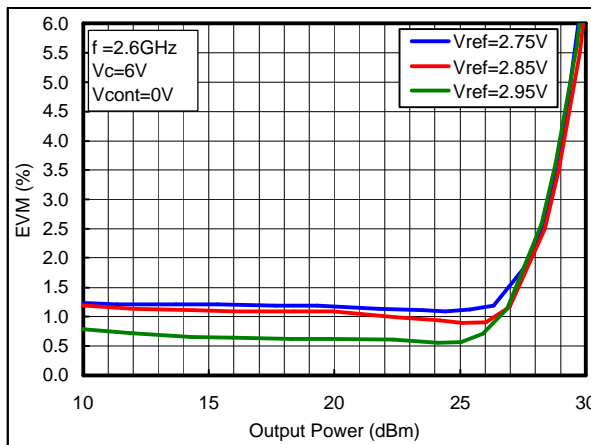
Output Power vs. Input Power



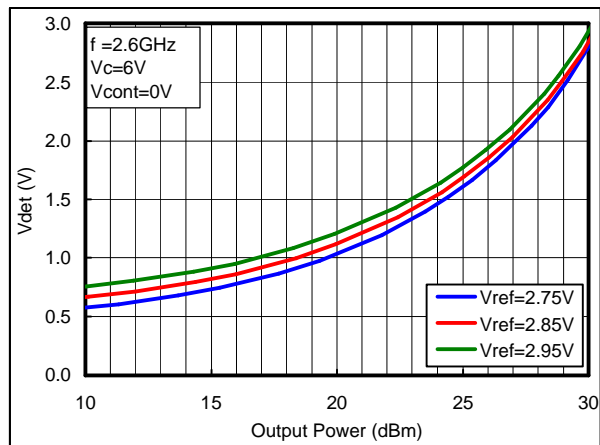
Efficiency vs. Output Power



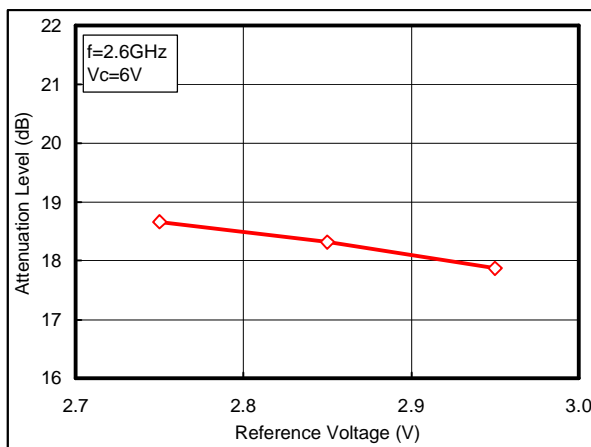
EVM vs. Output Power



Detector Voltage vs. Output Power

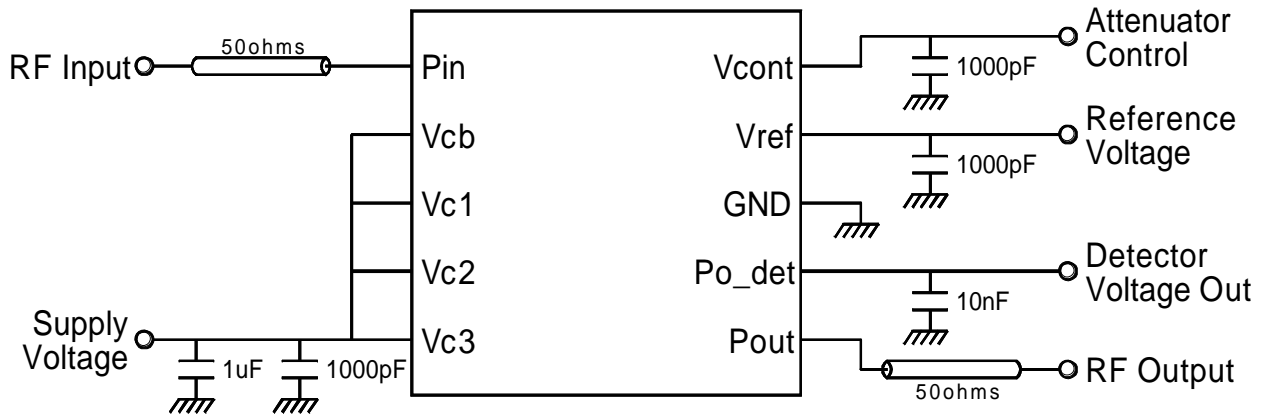


Attenuation Level



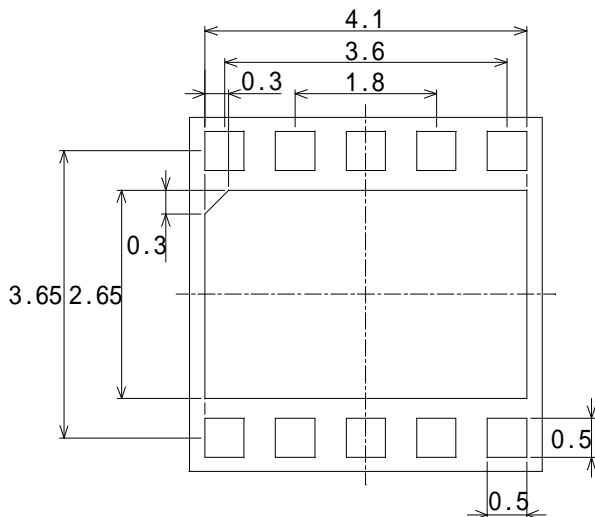
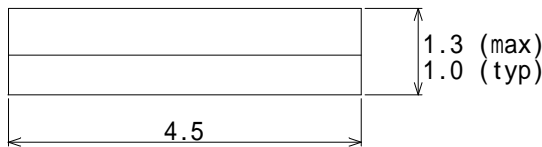
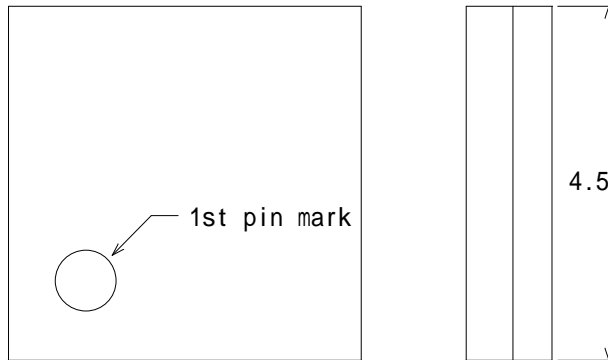
Specifications are subject to change without notice.

APPLICATION CIRCUIT



Pulse Operation is controlled by Vref

PACKAGE OUTLINE

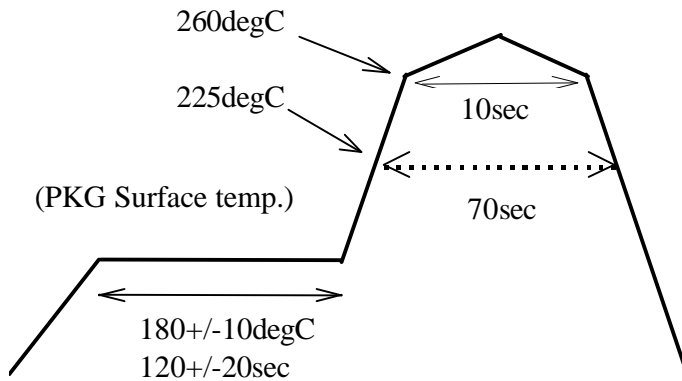


Dimension in millimeters.
Unless specified tolerance $\pm 0.2\text{mm}$.

Specifications are subject to change without notice.

HANDLING PRECAUTION

- 1) Work desk, test equipment, soldering iron and worker should be grounded before mounting and testing. Please note that electric discharge of GaAs HBT is much more sensitive than that of Si transistor. Handling without ground possibly damages GaAs HBT.
- 2) The surface of a board on which this product is mounted should be as flat and clean as possible to prevent a substrate from cracking by bending this product.
- 3) IR reflow soldering condition is confirmed following profile.



- 4) Handling precaution at high temperature
 This product has the structure of sealing with epoxy resin on glass epoxy substrate. This epoxy resin gets soft if the temperature exceeds glass transition temperature=120degC, and the thermic decomposition is occurred if the temperature exceeds 350degC. Therefore, in case of heating this product, please keep the same heat profile as recommended reflow one.
 Please note that crack, flaw or modification may be generated if softened epoxy resin part is handled with tweezers and etc at high temperature.
- 5) Cleaning condition
 Please select after confirming administrative guidance, legal restrictions, and the mass of the residual ion contaminant etc., and use it.
- 6) After soldering, please remove the flux. Please take care that solvent does not penetrate into this product.
- 7) GaAs HBT contains As(Arsenic). This product should be dumped as particular industrial waste.