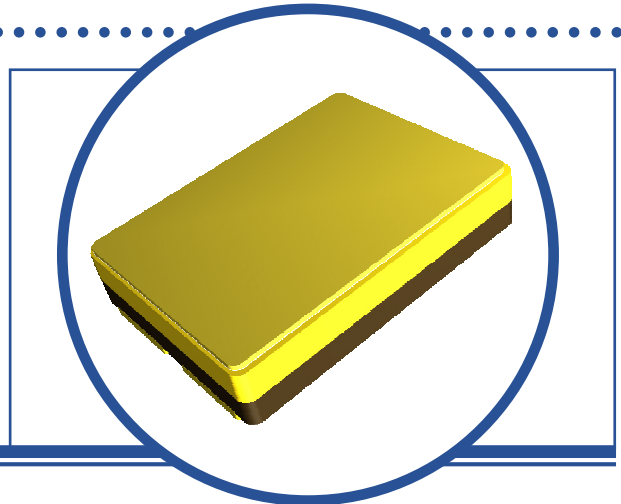


HIGH POWER SILICON NPN TRANSISTOR

BUL57AN2A, BUL57AN2B

- High Voltage, High Current
- Hermetic Ceramic Surface Mount Package
- Ideally Suited For Electronic Ballast, Switch Mode Power Supply Applications
- Screening Options Available



ABSOLUTE MAXIMUM RATINGS ($T_C = 25^\circ\text{C}$ unless otherwise stated)

V_{CBO}	Collector – Base Voltage	200V
V_{CEO}	Collector – Emitter Voltage	70V
V_{EBO}	Emitter – Base Voltage	10V
I_C	Continuous Collector Current	22A
$I_{C(PK)}$	Peak Collector Current	32A
I_B	Base Current	6A
P_D	Total Power Dissipation at $T_C = 25^\circ\text{C}$ Derate Above 25°C	85W 0.68W/ $^\circ\text{C}$
T_J	Junction Temperature Range	-55 to $+150^\circ\text{C}$
T_{stg}	Storage Temperature Range	-55 to $+150^\circ\text{C}$

THERMAL PROPERTIES

Symbols	Parameters	Max.	Units
$R_{\theta JC}$	Thermal Resistance, Junction To Case	1.47	$^\circ\text{C/W}$

Semelab Limited reserves the right to change test conditions, parameter limits and package dimensions without notice. Information furnished by Semelab is believed to be both accurate and reliable at the time of going to press. However Semelab assumes no responsibility for any errors or omissions discovered in its use. Semelab encourages customers to verify that datasheets are current before placing orders.

HIGH POWER SILICON NPN TRANSISTOR BUL57AN2A, BUL57AN2B

ELECTRICAL CHARACTERISTICS ($T_C = 25^\circ\text{C}$ unless otherwise stated)

Symbols	Parameters	Test Conditions	Min.	Typ	Max.	Units
$V_{(BR)CEO}^{(1)}$	Collector-Emitter Breakdown Voltage	$I_C = 10\text{mA}$ $I_B = 0$	70			V
$V_{(BR)CBO}$	Collector-Base Breakdown Voltage	$I_C = 1.0\text{mA}$ $I_E = 0$	200			
$V_{(BR)EBO}$	Emitter-Base Breakdown Voltage	$I_E = 1.0\text{mA}$ $I_C = 0$	10			
I_{CBO}	Collector-Cut-Off Current	$V_{CB} = 200\text{V}$ $I_E = 0$			10	μA
		$T_C = 125^\circ\text{C}$			100	
I_{CEO}	Collector-Cut-Off Current	$V_{CE} = 60\text{V}$ $I_B = 0$			100	
I_{EBO}	Emitter-Cut-Off Current	$V_{EB} = 9\text{V}$ $I_C = 0$			10	
		$T_C = 125^\circ\text{C}$			100	
$h_{FE}^{(1)}$	Forward-current transfer ratio	$I_C = 0.3\text{A}$ $V_{CE} = 4\text{V}$	30	55	90	
		$I_C = 5\text{A}$ $V_{CE} = 4\text{V}$	25	50	60	
		$I_C = 15\text{A}$ $V_{CE} = 4\text{V}$	20	35	50	
$V_{CE(sat)}^{(1)}$	Collector-Emitter Saturation Voltage	$I_C = 1.0\text{A}$ $I_B = 0.1\text{A}$		0.05	0.2	V
		$I_C = 5\text{A}$ $I_B = 0.5\text{A}$		0.15	0.6	
		$I_C = 15\text{A}$ $I_B = 1.5\text{A}$		0.35	1.5	
$V_{BE(sat)}^{(1)}$	Base-Emitter Saturation Voltage	$I_C = 5\text{A}$ $I_B = 0.5\text{A}$		0.88	1.2	
		$I_C = 15\text{A}$ $I_B = 1.5\text{A}$		1.0	1.4	

DYNAMIC CHARACTERISTICS

f_T	Transition Frequency	$I_C = 0.2\text{A}$ $V_{CE} = 4\text{V}$ $f = 10\text{MHz}$		20		MHz
C_{obo}	Output Capacitance	$V_{CB} = 10\text{V}$ $I_E = 0$ $f = 1.0\text{MHz}$			280	pF

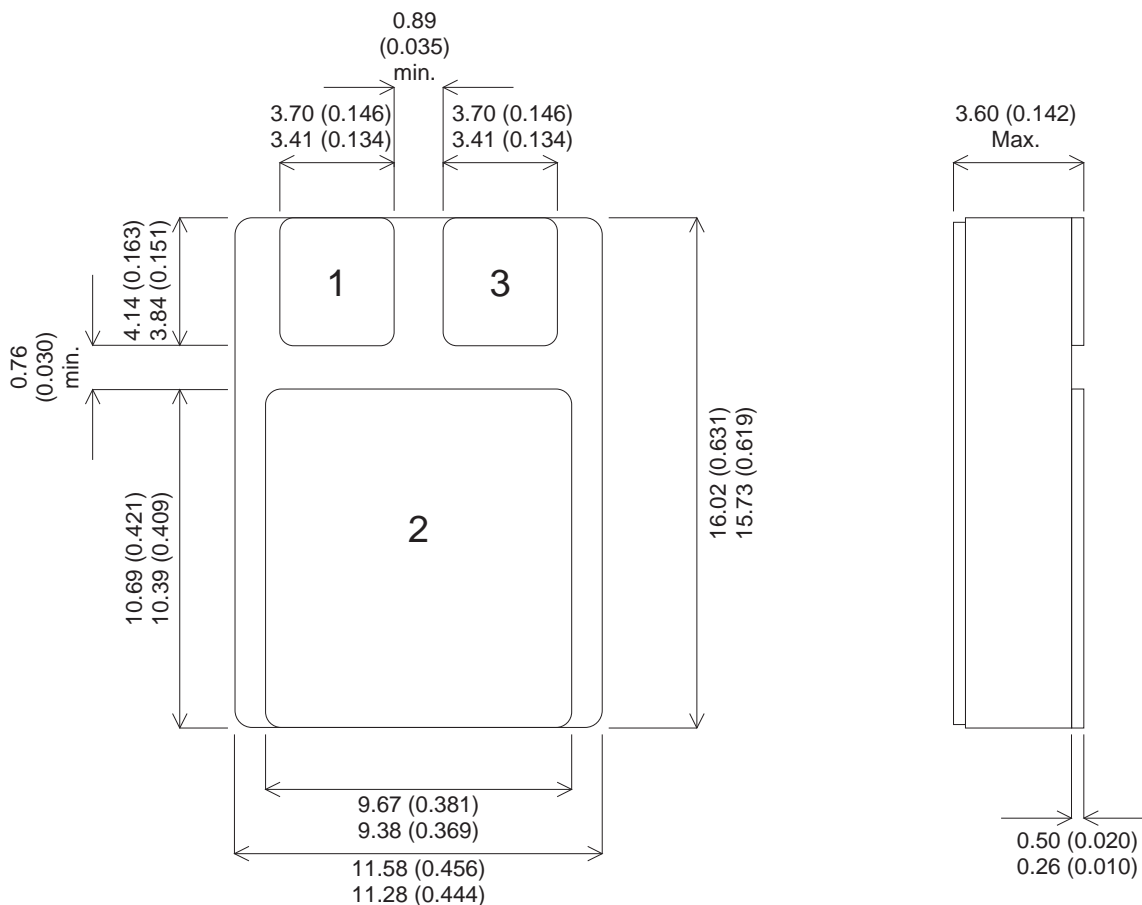
Notes

(1) Pulse Width $\leq 380\mu\text{s}$, $\delta \leq 2\%$

HIGH POWER SILICON NPN TRANSISTOR BUL57AN2A, BUL57AN2B

MECHANICAL DATA

Dimensions in mm (inches)



SMD1 (TO-276AB)

Underside View

Pad 1 – Base Pad 2 – Collector Pad 3 - Emitter

BUL57AN2 Variants

Part Number	Description
BUL57AN2A	Au Finished Pad
BUL57AN2B	Hot Solder Dip - 63Sn/37Pb

HIGH POWER SILICON NPN TRANSISTOR BUL57AN2A, BUL57AN2B

SCREENING OPTION

Space Level (JQRS/ESA) and High Reliability options are available in accordance with the [High Reliability and Screening Options Handbook](#) available for download from the from the TT electronics Semelab web site.

ESA Quality Level Products are based on the testing procedures specified in the generic ESCC 5000 and in the corresponding part detail specifications.

Semelabs QR216 and QR217 processing specifications (JQRS), in conjunction with the companies ISO 9001:2000 approval present a viable alternative to the American MIL-PRF-19500 space level processing.

QR217 (Space Level Quality Conformance) is based on the quality conformance inspection requirements of MIL-PRF-19500 groups A (table V), B (table VIa), C (table VII) and also ESA / ESCC 5000 (chart F4) lot validation tests.

QR216 (Space Level Screening) is based on the screening requirements of MIL-PRF-19500 (table IV) and also ESA /ESCC 5000 (chart F3).

JQRS parts are processed to the device data sheet and screened to QR216 with conformance testing to Q217 groups A and B in accordance with MIL-STD-750 methods and procedures.

Additional conformance options are available, for example Pre-Cap Visual Inspection, Buy-Off Visit or Data Packs. These are chargeable and must be specified at the order stage (See Ordering Information). Minimum order quantities may apply.

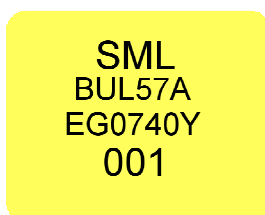
Alternative or additional customer specific conformance or screening requirements would be considered. Contact Semelab sales with enquires.

MARKING DETAILS

Typical marking would include part or specification number, week of seal or serial number subject to available space and legibility.

Customer specific marking requirements can be arranged at the time of order.

Example Marking:



ORDERING INFORMATION

Part numbers are built up from Type, Package Variant, and screening level. The part numbers are extended to include the additional options as shown below.

Type – See Electrical Characteristics Table
Package Variant – See Mechanical Data
Screening Level – See Screening Options (ESA / JQRS)

Additional Options:

Customer Pre-Cap Visual Inspection	.CVP
Customer Buy-Off visit	.CVB
Data Pack	.DA
Solderability Samples	.SS
Scanning Electron Microscopy	.SEM
Radiography (X-ray)	.XRAY
Total Dose Radiation Test	.RAD
MIL-PRF-19500 (QR217)	
Group B charge	.GRPB
Group B destructive mechanical samples	.GBDM (12 pieces)
Group C charge	.GRPC
Group C destructive electrical samples	.GCDE (12 pieces)
Group C destructive mechanical samples	.GCDM (6 pieces)
ESA/ESCC	
Lot Validation Testing (subgroup 1) charge	.LVT1
LVT1 destructive samples (environmental)	.L1DE (15 pieces)
LVT1 destructive samples (mechanical)	.L1DM (15 pieces)
Lot Validation Testing (subgroup 2) charge	.LVT2
LVT2 endurance samples (electrical)	.L2D (15 pieces)
Lot Validation Testing (subgroup 3) charge	.LVT3
LVT3 destructive samples (mechanical)	.L3D (5 pieces)

Additional Option Notes:

- 1) All 'Additional Options' are chargeable and must be specified at order stage.
- 2) When Group B,C or LVT is required, additional electrical and mechanical destructive samples must be ordered
- 3) All destructive samples are marked the same as other production parts unless otherwise requested.

Example ordering information:

The following example is for the BUL57AN2 part with package variant B, JQRS screening, additional Group C conformance testing and a Data pack.

Part Numbers:

BUL57AN2B-JQRS (Include quantity for flight parts)
BUL57AN2B-JQRS.GRPC (chargeable conformance option)
BUL57AN2B-JQRS.GCDE (charge for destructive parts)
BUL57AN2B-JQRS.GCDM (charge for destructive parts)
BUL57AN2B-JQRS.DA (charge for Data pack)

Customers with any specific requirements (e.g. marking or screening) may be supplied with a similar alternative part number (there is maximum 20 character limit to part