

Available on commercial versions NPN Silicon Qualified pe	<u>Qualified Levels</u> : JAN				
DESCRIF	PTION				
This family of 2N1479 through 2N1482 medium-p o the JAN level for high-reliability applications.	oower, plana	ar transistor	s are militar	y qualifie	d
mportant: For the latest information, visit our website http://w	ww.microsem	<u>ii.com</u> .			
FEATUI	RES				
JEDEC registered 2N1479 through 2N1482 series					0
JAN qualification are available per MIL-S-19500/20					TO-5 Packag
(See <u>part nomenclature</u> for all available options.)	••••				
RoHS compliant versions available (commercial g	rade only)				
APPLICATIONS	/ BENEFIT	S			
General purpose transistors for low power applicat Low package profile Military and other high-reliability applications	tions requirir	ıg high freque		9	
General purpose transistors for low power applicat Low package profile	tions requirir	ig high freque	noted)	
General purpose transistors for low power applicat Low package profile Military and other high-reliability applications	tions requirir	ig high freque s otherwise 2N1479	noted 2N1480	g Unit	
General purpose transistors for low power applicat Low package profile Military and other high-reliability applications MAXIMUM RATINGS @ T _A = +2	tions requirir 25 ºC unles:	ig high freque	noted		
General purpose transistors for low power applicat Low package profile Military and other high-reliability applications <u>MAXIMUM RATINGS</u> @ T _A = +2 Parameters / Test Conditions Collector-Emitter Voltage	tions requirir 25 °C unless Symbol V _{CEO}	g high freque s otherwise 2N1479 2N1481	noted 2N1480 2N1482	Unit	MSC – Lawrence
General purpose transistors for low power applicat Low package profile Military and other high-reliability applications <u>MAXIMUM RATINGS @</u> T _A = +2 <u>Parameters / Test Conditions</u> Collector-Emitter Voltage Collector-Base Voltage	tions requirir	s otherwise 2N1479 2N1481 40 60	noted 2N1480 2N1482 55	Unit V	<u>MSC – Lawrence</u> 6 Lake Street,
General purpose transistors for low power applicat Low package profile Military and other high-reliability applications $\frac{MAXIMUM RATINGS @ T_A = +2}{Parameters / Test Conditions}$ Collector-Emitter Voltage Collector-Base Voltage Emitter-Base Voltage	tions requirin 25 °C unless Symbol V _{CEO} V _{CBO}	s otherwise 2N1479 2N1481 40 60	noted 2N1480 2N1482 55 100	Unit V V	6 Lake Street, Lawrence, MA 01841
General purpose transistors for low power applicat Low package profile Military and other high-reliability applications <u>MAXIMUM RATINGS @</u> T _A = +2 <u>Parameters / Test Conditions</u> Collector-Emitter Voltage Collector-Base Voltage Emitter-Base Voltage Base Current	tions requirir	g high freque s otherwise 2N1479 2N1481 40 60 1 1	noted 2N1480 2N1482 55 100 2	Unit V V V	6 Lake Street, Lawrence, MA 01841 Tel: 1-800-446-1158 or (978) 620-2600
General purpose transistors for low power applicat Low package profile Military and other high-reliability applications $\frac{MAXIMUM RATINGS @ T_A = +2}{Parameters / Test Conditions}$ Collector-Emitter Voltage Collector-Base Voltage Emitter-Base Voltage Base Current Collector Current	tions requirin 25 °C unless Symbol V _{CEO} V _{CBO} V _{EBO} I _B I _C	s otherwise 2N1479 2N1481 40 60 1 1 1	noted 2N1480 2N1482 55 100 2 .0	Unit V V V A	6 Lake Street, Lawrence, MA 01841 Tel: 1-800-446-1158 or
General purpose transistors for low power applicat Low package profile Military and other high-reliability applications $\frac{MAXIMUM RATINGS @ T_A = +2}{Parameters / Test Conditions}$ Collector-Emitter Voltage Collector-Emitter Voltage Emitter-Base Voltage Emitter-Base Voltage Base Current Collector Current Operating & Storage Junction Temperature Range	tions requirin 25 °C unless Symbol V _{CEO} V _{CBO} I _B	g high freque s otherwise 2N1479 2N1481 40 60 1 1 1 -65 tc	noted 2N1480 2N1482 55 100 2 .0 .5	Unit V V V A A	6 Lake Street, Lawrence, MA 01841 Tel: 1-800-446-1158 or (978) 620-2600
General purpose transistors for low power applicat Low package profile Military and other high-reliability applications <u>MAXIMUM RATINGS @ T_A = +2</u> Parameters / Test Conditions Collector-Emitter Voltage Collector-Base Voltage Emitter-Base Voltage Emitter-Base Voltage Base Current Collector Current Operating & Storage Junction Temperature Range Thermal Resistance Junction-to-Case	tions requirin 25 °C unless Symbol V _{CEO} V _{CBO} V _{CBO} I _B I _C T _J , T _{stg} R _{⊖JC}	g high freque s otherwise 2N1479 2N1481 40 60 1 1 1 1 -65 to 3	noted 2N1480 2N1482 55 100 2 .0 .5 +200	Unit V V V A A A °C	6 Lake Street, Lawrence, MA 01841 Tel: 1-800-446-1158 or (978) 620-2600 Fax: (978) 689-0803 <u>MSC – Ireland</u> Gort Road Business Park
General purpose transistors for low power applicat Low package profile Military and other high-reliability applications MAXIMUM RATINGS @ T _A = +2 Parameters / Test Conditions Collector-Emitter Voltage Collector-Base Voltage Emitter-Base Voltage Base Current Collector Current Operating & Storage Junction Temperature Range Thermal Resistance Junction-to-Case	tions requirin 25 ⁰C unless Symbol V _{CEO} V _{CBO} V _{EBO} I _B I _C T _J , T _{stg} R _{⊕JC} P _T	g high freque s otherwise 2N1479 2N1481 40 60 1 1 1 1 -65 to 3	noted 2N1480 2N1482 55 100 2 .0 .5 +200 55	Unit V V A A A °C °C/W	6 Lake Street, Lawrence, MA 01841 Tel: 1-800-446-1158 or (978) 620-2600 Fax: (978) 689-0803 MSC – Ireland



MECHANICAL and PACKAGING

- CASE: Hermetically sealed steel base, nickel cap
- TERMINALS: Leads are gold plated kovar (Solder dip (Sn63/Pb37) is available upon special request. NOTE: Solder dipping will eliminate RoHS compliance.)
- MARKING: Part number, date code, manufacturer's ID
- POLARITY: NPN
- WEIGHT: Approximately 1.14 grams
- See <u>Package Dimensions</u> on last page.

PART NOMENCLATURE



	SYMBOLS & DEFINITIONS					
Symbol	Definition					
h _{FE}	Common-emitter static forward current transfer ratio: The ratio of the dc output current to the dc input current with the output voltage held constant.					
Ι _Β	Base current: The value of the dc current into the base terminal.					
Ι _C	Collector current: The value of the dc current into the collector terminal.					
Ι _Ε	Emitter current: The value of the dc current into the emitter terminal.					
T _C	Case temperature: The temperature measured at a specified location on the case of a device.					
V _{(BR)CEO}	Collector-emitter breakdown voltage, base open. The breakdown voltage between the collector and emitter terminals when the collector terminal is biased in the reverse direction with respect to the emitter terminal, and the base terminal is open circuited. The collector terminal is considered to be biased in the reverse direction when it is made positive for npn transistors, or negative for pnp transistors, with respect to the emitter terminal.					
V _{CB}	Collector-base voltage: The dc voltage between the collector and the base.					
V _{CBO}	Collector-base voltage, emitter open: The voltage between the collector and base terminals when the emitter terminal is open-circuited.					
V _{CC}	Collector-supply voltage: The supply voltage applied to a circuit connected to the collector.					
V _{CE}	Collector-emitter voltage: The dc voltage between the collector and the emitter.					
V _{CE(sat)}	Collector-emitter saturation voltage: The voltage between the collector and emitter terminals under conditions of base current or base-emitter voltage beyond which the collector current remains essentially constant as the base current or voltage is increased.					
V _{CEO}	Collector-emitter voltage, base open: The voltage between the collector and the emitter terminals when the base terminal is open-circuited.					
V _{EB}	Emitter-base voltage: The dc voltage between the emitter and the base					
V _{EBO}	Emitter-base voltage, collector open: The voltage between the emitter and base terminals with the collector terminal open-circuited.					



ELECTRICAL CHARACTERISTICS @ T_A = +25 °C, unless otherwise noted

OFF CHARACTERISTICS

Parameters / Test Conditions		Symbol	Min.	Max.	Unit
Collector-Emitter Breakdown Voltage					
$I_{\rm C} = 50 {\rm mA},$	2N1479, 2N1481	V _{(BR)CEO}	40		V
	2N1480, 2N1482		55		
Collector-Emitter Breakdown Voltage					
V _{EB} = 1.5 V, I _C = 0.25 mA	2N1479, 2N1481	V _{(BR)CEX}	60		V
$V_{EB} = 1.5 \text{ V}, I_{C} = 0.25 \text{ mA}$	2N1480, 2N1482		100		
Collector-Base Cutoff Current					
$V_{CB} = 30 V$	2N1479, 2N1481	I _{CBO1}		5.0	μA
$V_{CB} = 50 V$	2N1480, 2N1482				
Emitter-Base Cutoff Current		1		10	
V _{EB} = 12 V		I _{EBO}		10	μA

ON CHARACTERISTICS

Parameters / Test Conditions		Symbol	Min.	Max.	Unit
Forward-Current Transfer Ratio $I_{C} = 200 \text{ mA}, V_{CE} = 4.0 \text{ V}$	2N1479, 2N1480	h _{FE}	20	60	
	2N1481, 2N1482		35	100	
Collector-Emitter Saturation Voltage					
$I_{\rm C} = 200 \text{ mA}, I_{\rm B} = 20 \text{ mA}$	2N1479, 2N1480	V _{CE(sat)}		0.75	V
$I_{\rm C} = 200 \text{ mA}, I_{\rm B} = 10 \text{ mA}$	2N1481, 2N1482			0.75	
Base-Emitter Voltage Non-Saturation $I_{C} = 200 \text{ mA}, V_{CE} = 4.0 \text{ V}$		V_{BE}		1.5	V

DYNAMIC CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Forward Current Cutoff Frequency $I_{C} = 5.0 \text{ mA}, V_{CB} = 28 \text{ V}$	f_{ab}	800		kHz

SWITCHING CHARACTERISTICS

Parameters / Test Conditions	Symbol	Min.	Max.	Unit
Turn-On / Turn-Off Time $V_{CC} = 12 \text{ V}, \text{ R}_{C} = 59 \Omega, \text{ I}_{B0} = \text{ I}_{B2} = 8.5 \text{ mA}; \text{ I}_{B1} = 20 \text{ mA}$	$t_{on} + t_{off}$		25	μs

Note



PACKAGE DIMENSIONS

Symbol



CD	0.305	0.335	7.75	8.51	
СН	0.240	0.260	6.10	6.60	
HD	0.335	0.370	8.51	9.40	
LC	0.20	0.200 TP		5.08 TP	
LD	0.016	0.021	0.41	0.53	2, 9
LL	1.5	1.75	3.81	4.45	9
LU	0.016	0.019	0.41	0.48	3, 9
L1	-	0.050	-	1.27	13
L2	0.250	-	6.35	-	13
Р	0.100	-	2.54	-	4
Q	-	-	-	-	5
TL	0.029	0.045	0.74	1.14	8
TW	0.028	0.034	0.71	0.86	
r	-	0.007	-	0.18	Radius
α	45	° TP	45°	45° TP	

Dimensions

Millimeters

Max

Min

Inch

Max

Min





NOTES:

- 1. Dimensions are in inches. Millimeters are given for information only.
- 2. Measure in the zone beyond 0.250 (6.35 mm) from the seating plane.
- 3. Measure in the zone 0.050 (1.27 mm) and 0.250 (6.35 mm) from the seating plane.
- 4. Variations on Dim B in this zone shall not exceed 0.010 (0.25 mm).
- 5. Outline in this zone is not controlled.
- 6. When measured in a gauging plane 0.054 + 0.001 (1.37 mm + 0.03 mm) below the seating plane of the transistor max dia leads shall be within 0.007 (0.18mm) of their true location relative to a maximum width tab. Smaller dia leads shall fall within the outline of the max dia lead tolerance.
- 7. Collector internally connected to case.
- 8. Measured from the maximum diameter of the actual device.
- 9. All 3 leads.
- 10. Leads at gauge plane 0.054 inch (1.37 mm) +0.001 inch (0.03 mm) -0.000 inch (0.00 mm) below seating plane shall be within 0.007 inch (0.18 mm) radius of true position (TP) relative to tab. Device may be measured by direct methods or by gauge.