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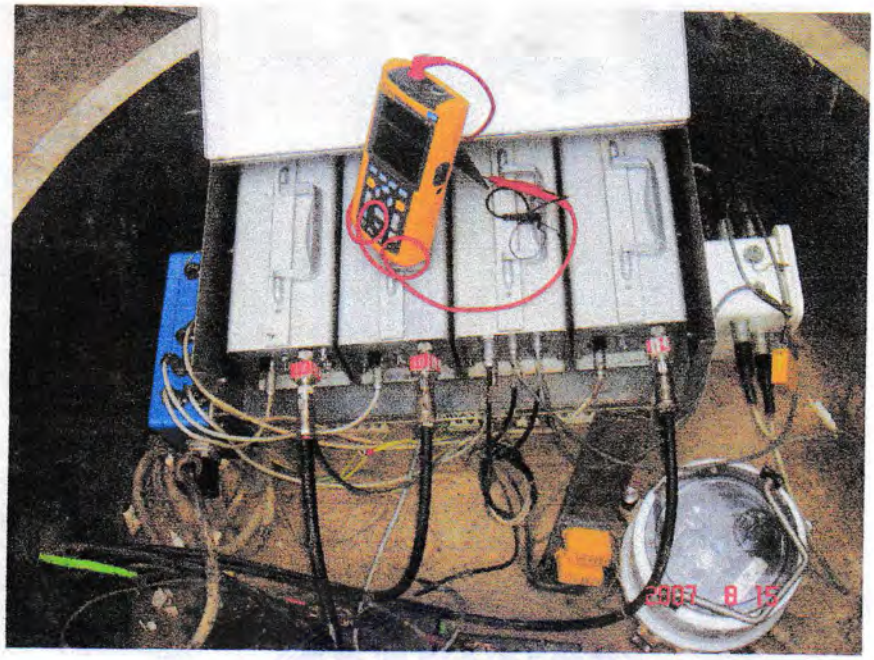
Solar Sel di Gunung Sibayak

Solar Sel dan Menara Transmiter



Warna Biru : RDS
Warna Perak : Tx dan Rx
Warna Putih (bulat) : Seismometer

RDS, TxRx dan Baterai dilihat dari samping

1N5820, 1N5821, 1N5822

1N5820 and 1N5822 are Preferred Devices

Axial Lead Rectifiers

This series employs the Schottky Barrier principle in a large area metal-to-silicon power diode. State-of-the-art geometry features chrome barrier metal, epitaxial construction with oxide passivation and metal overlap contact. Ideally suited for use as rectifiers in low-voltage, high-frequency inverters, free wheeling diodes, and polarity protection diodes.

Features

- Extremely Low V_F
- Low Power Loss/High Efficiency
- Low Stored Charge, Majority Carrier Conduction
- Shipped in plastic bags, 500 per bag
- Available in Tape and Reel, 1500 per reel, by adding a "RL" suffix to the part number
- Pb-Free Packages are Available*

Mechanical Characteristics:

- Case: Epoxy, Molded
- Weight: 1.1 Gram (Approximately)
- Finish: All External Surfaces Corrosion Resistant and Terminal Leads are Readily Solderable
- Lead Temperature for Soldering Purposes: 260°C Max. for 10 Seconds
- Polarity: Cathode indicated by Polarity Band

*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.

ON Semiconductor®

http://onsemi.com

SCHOTTKY BARRIER RECTIFIERS 3.0 AMPERES 20, 30, 40 VOLTS

AXIAL LEAD CASE 267-05 (DO-201AD) STYLE 1

MARKING DIAGRAM

A	= Assembly Location
1N582x	= Device Code
x	= 0, 1, or 2
YY	= Year
WW	= Work Week
▪	= Pb-Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information on page 3 of this data sheet.

Preferred devices are recommended choices for future use and best overall value.

MAXIMUM RATINGS

Rating	Symbol	1N5820	1N5821	1N5822	Unit
Peak Repetitive Reverse Voltage Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} V_R	20	30	40	V
Non-Repetitive Peak Reverse Voltage	V_{RSM}	24	36	48	V
RMS Reverse Voltage	$V_{R(RMS)}$	14	21	28	V
Average Rectified Forward Current (Note 1) $V_{R(equiv)} \leq 0.2\ V_{R(dc)}$, $T_L = 95°C$ ($R_{\theta JA} = 28°C/W$, P.C. Board Mounting, see Note 5)	I_O	3.0			A
Ambient Temperature Rated $V_{R(dc)}$, $P_{F(AV)} = 0$ $R_{\theta JA} = 28°C/W$	T_A	90	85	80	°C
Non-Repetitive Peak Surge Current (Surge applied at rated load conditions, half wave, single phase 60 Hz, $T_L = 75°C$)	I_{FSM}	80 (for one cycle)			A
Operating and Storage Junction Temperature Range (Reverse Voltage applied)	T_J, T_{stg}	−65 to +125			°C

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

***THERMAL CHARACTERISTICS** (Note 5)

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	28	°C/W

***ELECTRICAL CHARACTERISTICS** ($T_L = 25°C$ unless otherwise noted) (Note 1)

Characteristic	Symbol	1N5820	1N5821	1N5822	Unit
Maximum Instantaneous Forward Voltage (Note 2) ($i_F = 1.0$ Amp) ($i_F = 3.0$ Amp) ($i_F = 9.4$ Amp)	V_F	 0.370 0.475 0.850	 0.380 0.500 0.900	 0.390 0.525 0.950	V
Maximum Instantaneous Reverse Current @ Rated dc Voltage (Note 2) $T_L = 25°C$ $T_L = 100°C$	i_R	 2.0 20	 2.0 20	 2.0 20	mA

1. Lead Temperature reference is cathode lead 1/32″ from case.
2. Pulse Test: Pulse Width = 300 μs, Duty Cycle = 2.0%.

*Indicates JEDEC Registered Data for 1N5820-22.

MOTOROLA
SEMICONDUCTOR TECHNICAL DATA

Order this document
by MJ1000/D

Medium-Power Complementary Silicon Transistors

. . . for use as output devices in complementary general purpose amplifier applications.

- High DC Current Gain — h_{FE} = 6000 (Typ) @ I_C = 3.0 Adc
- Monolithic Construction with Built–in Base–Emitter Shunt Resistors

NPN
MJ1000
MJ1001*

*Motorola Preferred Device

10 AMPERE
DARLINGTON
POWER TRANSISTORS
COMPLEMENTARY
SILICON
60–80 VOLTS
90 WATTS

CASE 1–07
TO–204AA
(TO–3)

MAXIMUM RATINGS

Rating	Symbol	MJ1000	MJ1001	Unit
Collector–Emitter Voltage	V_{CEO}	60	80	Vdc
Collector–Base Voltage	V_{CB}	60	80	Vdc
Emitter–Base Voltage	V_{EB}	5.0		Vdc
Collector Current	I_C	10		Adc
Base Current	I_B	0.1		Adc
Total Device Dissipation @ T_C = 25°C Derate above 25°C	P_D	90 0.515		Watts W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +200		°C

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction to Case	$R_{\theta JC}$	1.94	°C/W

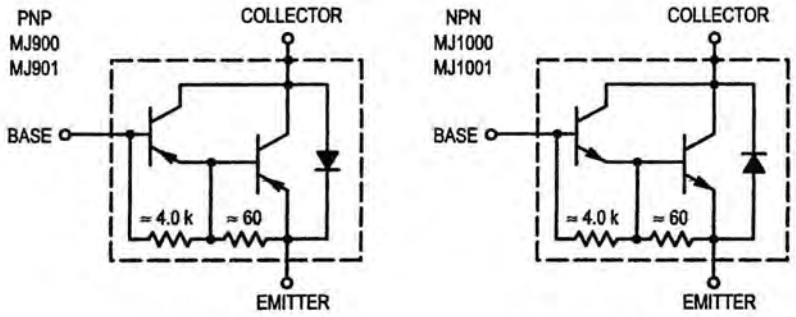


Figure 1. Darlington Circuit Schematic

Preferred devices are Motorola recommended choices for future use and best overall value.

REV 7

MOTOROLA

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector–Emitter Breakdown Voltage(1) (I_C = 100 mAdc, I_B = 0)	MJ1000 MJ1001	$V_{(BR)CEO}$	60 80	— —	Vdc
Collector Emitter Leakage Current		I_{CER}			mAdc
(V_{CB} = 60 Vdc, R_{BE} = 1.0k ohm)	MJ1000		—	1.0	
(V_{CB} = 80 Vdc, R_{BE} = 1.0k ohm)	MJ1001		—	1.0	
(V_{CB} = 60 Vdc, R_{BE} = 1.0k ohm, T_C = 150°C)	MJ1000		—	5.0	
(V_{CB} = 80 Vdc, R_{BE} = 1.0k ohm, T_C = 150°C)	MJ1001		—	5.0	
Emitter Cutoff Current (V_{BE} = 5.0 Vdc, I_C = 0)		I_{EBO}	—	2.0	mAdc
Collector Emitter Leakage Current (V_{CE} = 30 Vdc, I_B = 0)	MJ1000	I_{CEO}	—	500	μAdc
(V_{CE} = 40 Vdc, I_B = 0)	MJ1001		—	500	
ON CHARACTERISTICS					
DC Current Gain(1) (I_C = 3.0 Adc, V_{CE} = 3.0 Vdc)		h_{FE}	1000	—	—
(I_C = 4.0 Adc, V_{CE} = 3.0 Vdc)			750	—	
Collector Emitter Saturation Voltage(1) (I_C = 30 Adc, I_B = 12 mAdc)		$V_{CE(sat)}$	—	2.0	Vdc
(I_C = 8.0 Adc, I_B = 40 mAdc)			—	4.0	
Base Emitter Voltage(1) (I_C = 3.0 Adc, V_{CE} = 3.0 Vdc)		$V_{BE(on)}$	—	2.5	Vdc

(1)Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

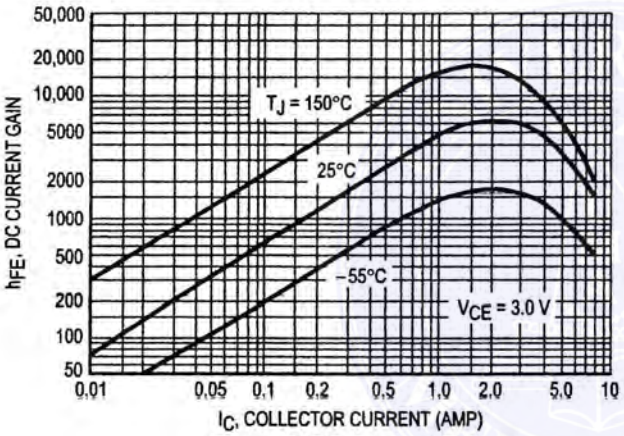


Figure 2. DC Current Gain

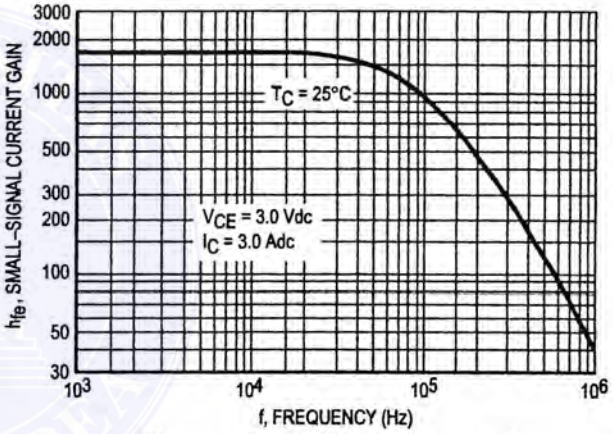


Figure 3. Small–Signal Current Gain

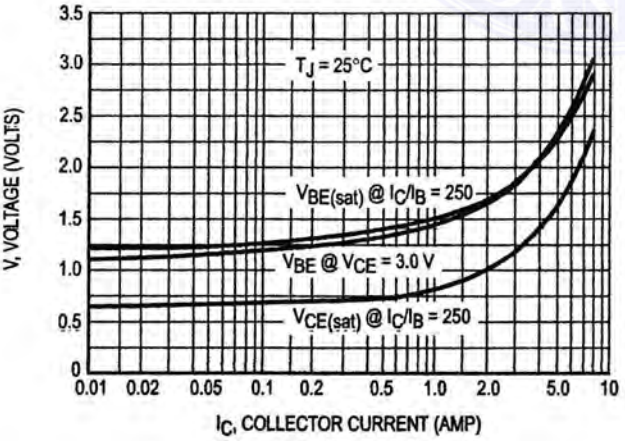


Figure 4. "On" Voltages

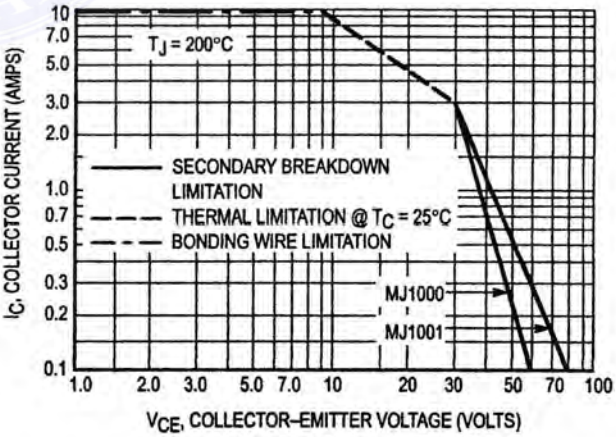
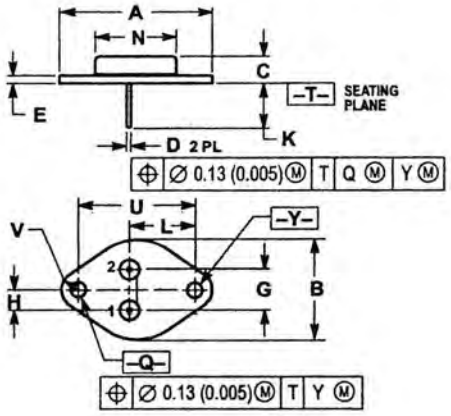


Figure 5. DC Safe Operating Area

There we two limitations on the power handling ability of a transistor: average junction temperature and secondary breakdown. Safe operating area curves indicate $I_C - V_{CE}$ limits of the transistor that must be observed for reliable operation; e.g., the transistor must not be subjected to greater dissipation than the curves indicate.

At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by secondary breakdown.

PACKAGE DIMENSIONS



NOTES:
1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. ALL RULES AND NOTES ASSOCIATED WITH REFERENCED TO–204AA OUTLINE SHALL APPLY.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
A	1.550 REF		39.37 REF	
B	—	1.050	—	26.67
C	0.250	0.335	6.35	8.51
D	0.038	0.043	0.97	1.09
E	0.055	0.070	1.40	1.77
G	0.430 BSC		10.92 BSC	
H	0.215 BSC		5.46 BSC	
K	0.440	0.480	11.18	12.19
L	0.665 BSC		16.89 BSC	
N	—	0.830	—	21.08
Q	0.151	0.165	3.84	4.19
U	1.187 BSC		30.15 BSC	
V	0.131	0.188	3.33	4.77

STYLE 1:
PIN 1. BASE
2. EMITTER
CASE: COLLECTOR

CASE 1–07
TO–204AA (TO–3)
ISSUE Z

LM108A/LM208A Absolute Maximum Ratings

If Military/Aerospace specified devices are required, please contact the National Semiconductor Sales Office/Distributors for availability and specifications. (Note 5)

Supply Voltage	±20V
Power Dissipation (Note 1)	500 mW
Differential Input Current (Note 2)	±10 mA
Input Voltage (Note 3)	±15V
Output Short-Circuit Duration	Continuous
Operating Free Air Temperature Range	
LM108A	−55°C to +125°C
LM208A	−25°C to +85°C
Storage Temperature Range	−65°C to +150°C
Lead Temperature (Soldering, 10 sec.) (DIP)	260°C
Soldering Information	
Dual-In-Line Package	
Soldering (10 sec.)	260°C
Small Outline Package	
Vapor Phase (60 sec.)	215°C
Infrared (15 sec.)	220°C

See An-450 "Surface Mounting Methods and Their Effect on Product Reliability" for other methods of soldering surface mount devices.

ESD Tolerance (Note 6) 2000V

Electrical Characteristics (Note 4)

Parameter	Conditions	Min	Typ	Max	Units
Input Offset Voltage	$T_A = 25°C$		0.3	0.5	mV
Input Offset Current	$T_A = 25°C$		0.05	0.2	nA
Input Bias Current	$T_A = 25°C$		0.8	2.0	nA
Input Resistance	$T_A = 25°C$	30	70		MΩ
Supply Current	$T_A = 25°C$		0.3	0.6	mA
Large Signal Voltage Gain	$T_A = 25°C$, $V_S = ±15V$, $V_{OUT} = ±10V$, $R_L \geq 10\,k\Omega$	80	300		V/mV
Input Offset Voltage				1.0	mV
Average Temperature Coefficient of Input Offset Voltage			1.0	5.0	µV/°C
Input Offset Current				0.4	nA
Average Temperature Coefficient of Input Offset Current			0.5	2.5	pA/°C
Input Bias Current				3.0	nA
Supply Current	$T_A = 125°C$		0.15	0.4	mA
Large Signal Voltage Gain	$V_S = ±15V$, $V_{OUT} = ±10V$, $R_L \geq 10\,k\Omega$	40			V/mV
Output Voltage Swing	$V_S = ±15V$, $R_L = 10\,k\Omega$	±13	±14		V
Input Voltage Range	$V_S = ±15V$	±13.5			V
Common Mode Rejection Ratio		96	110		dB
Supply Voltage Rejection Ratio		96	110		dB

Note 1: The maximum junction temperature of the LM108A is 150°C, while that of the LM208A is 100°C. For operating at elevated temperatures, devices in the H08 package must be derated based on a thermal resistance of 160°C/W, junction to ambient, or 20°C/W, junction to case. The thermal resistance of the dual-in-line package is 100°C/W, junction to ambient.

Note 2: The inputs are shunted with back-to-back diodes for overvoltage protection. Therefore, excessive current will flow if a differential input voltage in excess of 1V is applied between the inputs unless some limiting resistance is used.

Note 3: For supply voltages less than ±15V, the absolute maximum input voltage is equal to the supply voltage.

Note 4: These specifications apply for $±5V \leq V_S \leq ±20V$ and $-55°C \leq T_A \leq 125°C$, unless otherwise specified. With the LM208A, however, all temperature specifications are limited to $-25°C \leq T_A \leq 85°C$.

Note 5: Refer to RETS108AX for LM108AH and LM108AJ-8 military specifications.

Note 6: Human body model, 1.5 kΩ in series with 100 pF.