

MJE15028, MJE15030 (NPN) MJE15029, MJE15031 (PNP)

Complementary Silicon Plastic Power Transistors

These devices are designed for use as high-frequency drivers in audio amplifiers.

Features

- DC Current Gain Specified to 4.0 A
 $h_{FE} = 40$ (Min) @ $I_C = 3.0$ Adc
 $= 20$ (Min) @ $I_C = 4.0$ Adc
- Collector-Emitter Sustaining Voltage –
 $V_{CEO(sus)} = 120$ Vdc (Min); MJE15028, MJE15029
 $= 150$ Vdc (Min); MJE15030, MJE15031
- High Current Gain – Bandwidth Product
 $f_T = 30$ MHz (Min) @ $I_C = 500$ mAdc
- TO-220AB Compact Package
- Pb-Free Packages are Available*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector-Emitter Voltage MJE15028, MJE15029 MJE15030, MJE15031	V_{CEO}	120 150	Vdc
Collector-Base Voltage MJE15028, MJE15029 MJE15030, MJE15031	V_{CB}	120 150	Vdc
Emitter-Base Voltage	V_{EB}	5.0	Vdc
Collector Current – Continuous – Peak	I_C I_{CM}	8.0 16	Adc
Base Current	I_B	2.0	Adc
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	50 0.40	W W/ $^\circ\text{C}$
Total Device Dissipation @ $T_C = 25^\circ\text{C}$ Derate above 25°C	P_D	2.0 0.016	W W/ $^\circ\text{C}$
Operating and Storage Junction Temperature Range	T_J, T_{stg}	-65 to +150	$^\circ\text{C}$

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	2.5	$^\circ\text{C/W}$
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$

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.

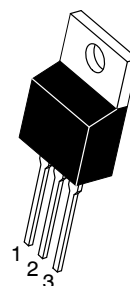
*For additional information on our Pb-Free strategy and soldering details, please download the ON Semiconductor Soldering and Mounting Techniques Reference Manual, SOLDERRM/D.



ON Semiconductor®

<http://onsemi.com>

8 AMPERE POWER TRANSISTORS COMPLEMENTARY SILICON 120-150 VOLTS, 50 WATTS



TO-220AB
CASE 221A-09
STYLE 1

MARKING DIAGRAM



MJE150xx = Device Code
x = 28, 29, 30, or 31
A = Assembly Location
Y = Year
WW = Work Week
G = Pb-Free Package

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 5 of this data sheet.

MJE15028, MJE15030 (NPN) MJE15029, MJE15031 (PNP)

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

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector-Emitter Sustaining Voltage (Note 1) ($I_C = 10\text{ mAdc}$, $I_B = 0$)	$V_{CEO(sus)}$	120 150	– –	Vdc
Collector Cutoff Current ($V_{CE} = 120\text{ Vdc}$, $I_B = 0$) ($V_{CE} = 150\text{ Vdc}$, $I_B = 0$)	I_{CEO}	– –	0.1 0.1	mAdc
Collector Cutoff Current ($V_{CB} = 120\text{ Vdc}$, $I_E = 0$) ($V_{CB} = 150\text{ Vdc}$, $I_E = 0$)	I_{CBO}	– –	10 10	μAdc
Emitter Cutoff Current ($V_{BE} = 5.0\text{ Vdc}$, $I_C = 0$)	I_{EBO}	–	10	μAdc
ON CHARACTERISTICS (Note 1)				
DC Current Gain ($I_C = 0.1\text{ Adc}$, $V_{CE} = 2.0\text{ Vdc}$) ($I_C = 2.0\text{ Adc}$, $V_{CE} = 2.0\text{ Vdc}$) ($I_C = 3.0\text{ Adc}$, $V_{CE} = 2.0\text{ Vdc}$) ($I_C = 4.0\text{ Adc}$, $V_{CE} = 2.0\text{ Vdc}$)	h_{FE}	40 40 40 20	– – – –	–
DC Current Gain Linearity (V_{CE} From 2.0 V to 20 V, I_C From 0.1 A to 3 A) (NPN to PNP)	h_{FE}	Typ 2 3		
Collector-Emitter Saturation Voltage ($I_C = 1.0\text{ Adc}$, $I_B = 0.1\text{ Adc}$)	$V_{CE(sat)}$	–	0.5	Vdc
Base-Emitter On Voltage ($I_C = 1.0\text{ Adc}$, $V_{CE} = 2.0\text{ Vdc}$)	$V_{BE(on)}$	–	1.0	Vdc
DYNAMIC CHARACTERISTICS				
Current Gain – Bandwidth Product (Note 2) ($I_C = 500\text{ mAdc}$, $V_{CE} = 10\text{ Vdc}$, $f_{test} = 10\text{ MHz}$)	f_T	30	–	MHz

1. Pulse Test: Pulse Width $\leq 300\text{ }\mu\text{s}$, Duty Cycle $\leq 2.0\%$.
2. $f_T = |h_{fe}| \cdot f_{test}$.

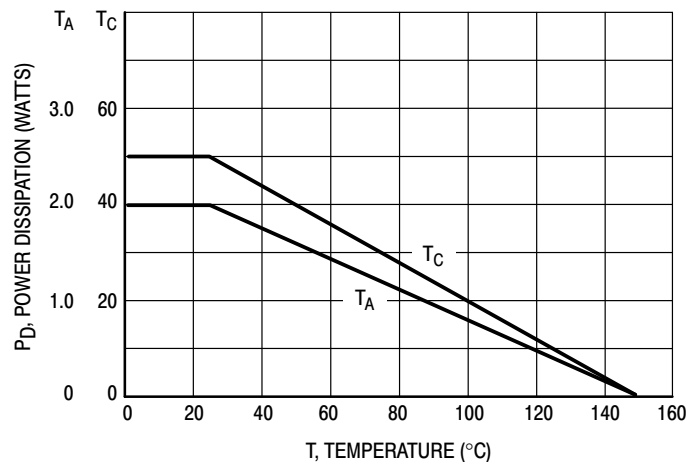


Figure 1. Power Derating

MJE15028, MJE15030 (NPN) MJE15029, MJE15031 (PNP)

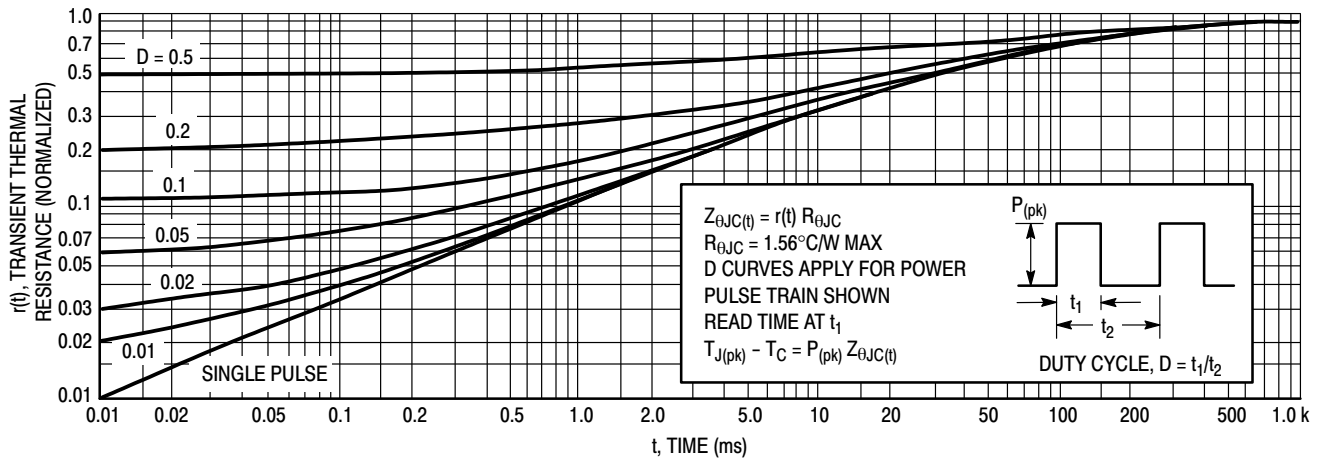


Figure 2. Thermal Response

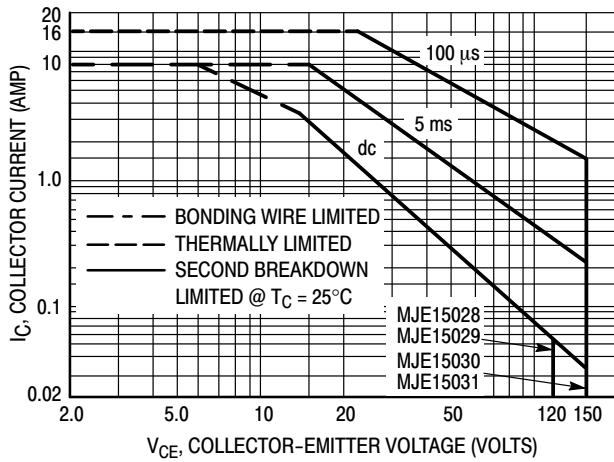


Figure 3. Forward Bias Safe Operating Area

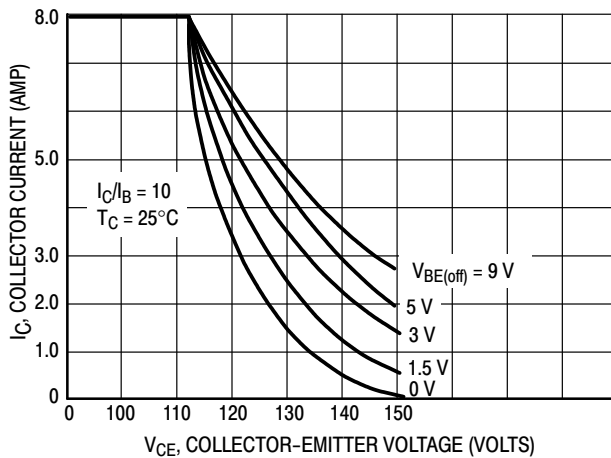


Figure 4. Reverse-Bias Switching Safe Operating Area

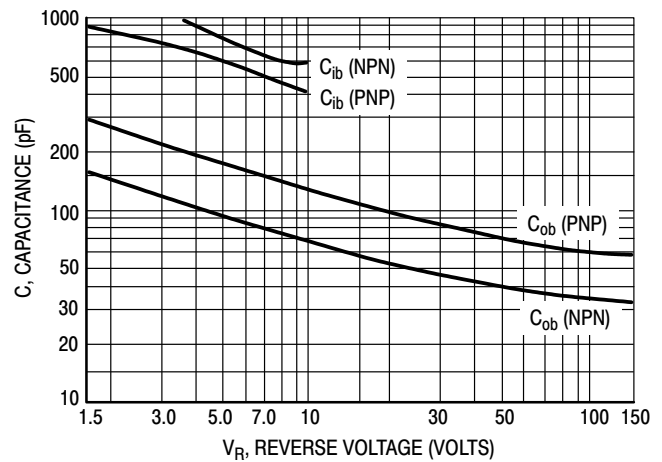


Figure 5. Capacitances

MJE15028, MJE15030 (NPN) MJE15029, MJE15031 (PNP)

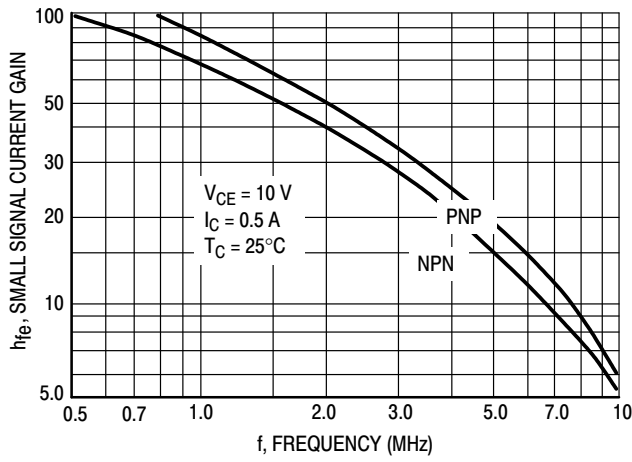


Figure 6. Small-Signal Current Gain

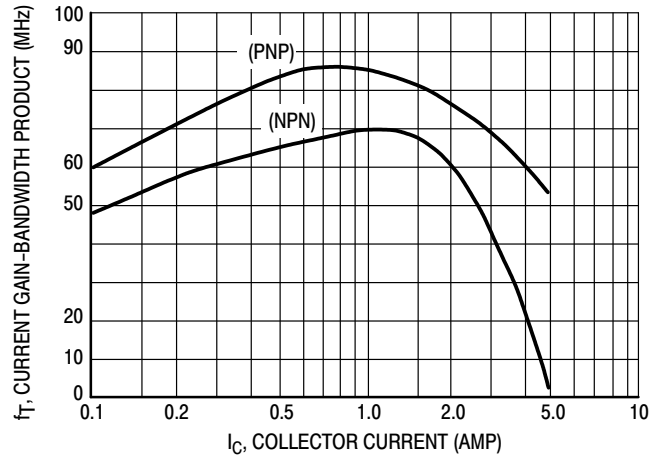
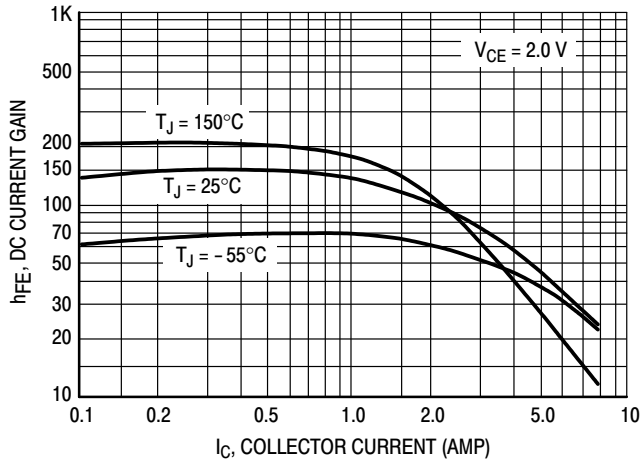


Figure 7. Current Gain-Bandwidth Product

NPN — MJE15028 MJE15030



PNP — MJE15029 MJE15031

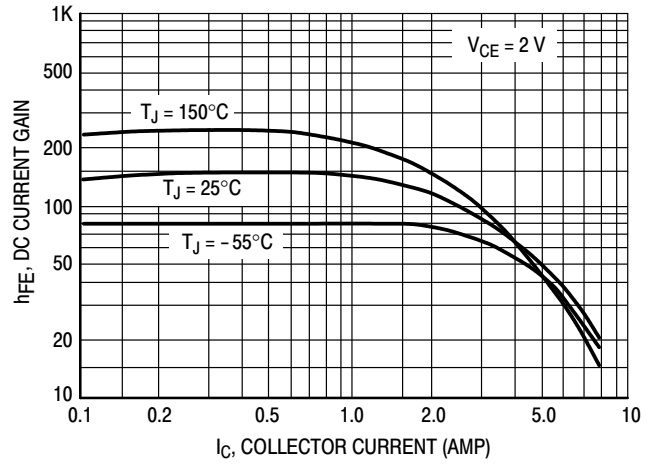
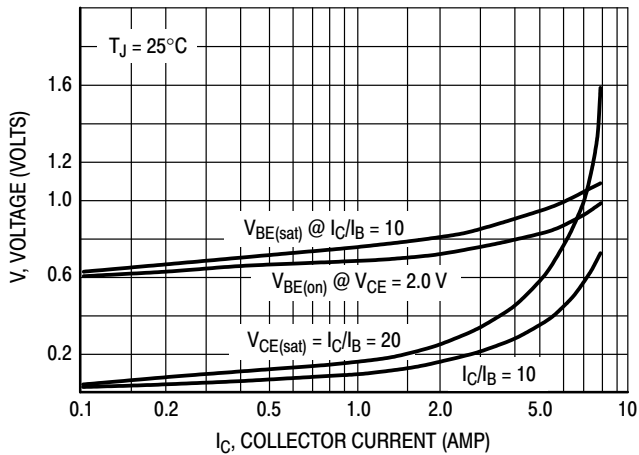


Figure 8. DC Current Gain

NPN



PNP

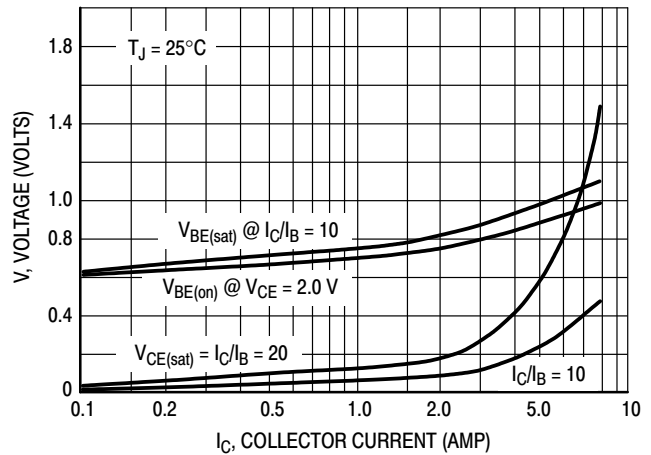


Figure 9. "On" Voltage

MJE15028, MJE15030 (NPN) MJE15029, MJE15031 (PNP)

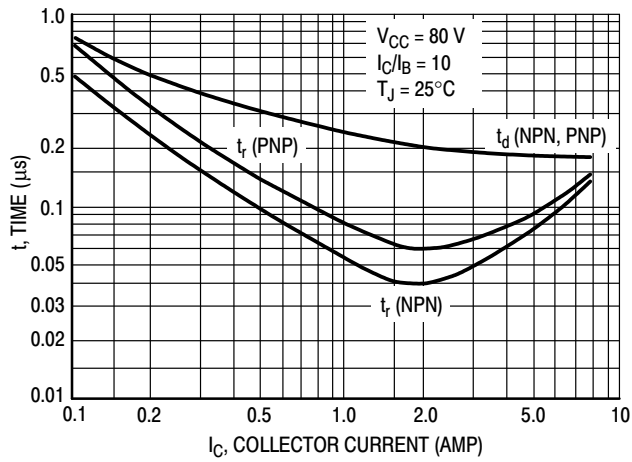


Figure 10. Turn-On Times

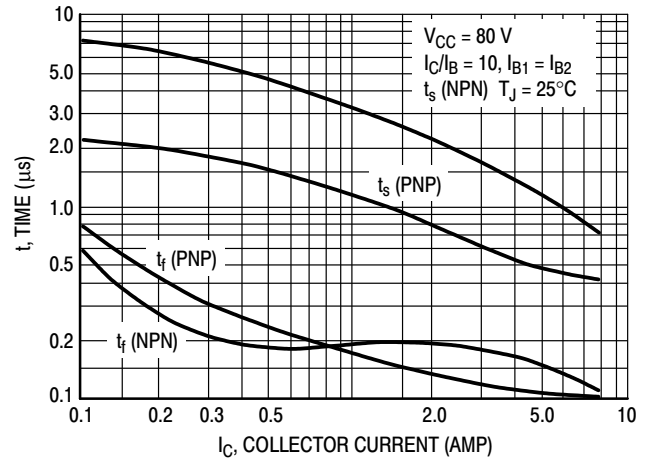


Figure 11. Turn-Off Times

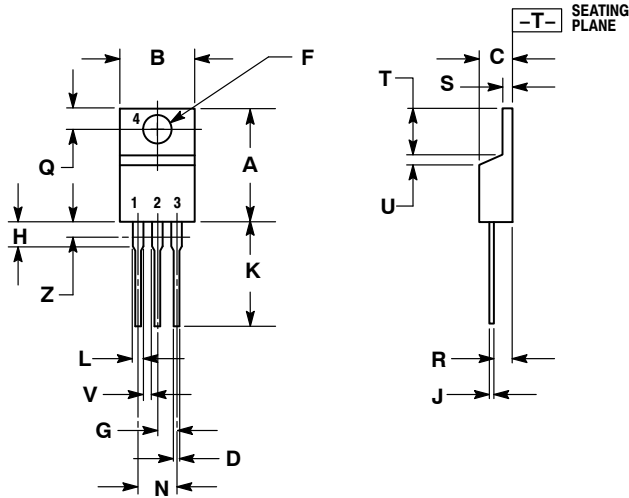
ORDERING INFORMATION

Device	Package	Shipping
MJE15028	TO-220	50 Units / Rail
MJE15028G	TO-220 (Pb-Free)	50 Units / Rail
MJE15029	TO-220	50 Units / Rail
MJE15029G	TO-220 (Pb-Free)	50 Units / Rail
MJE15030	TO-220	50 Units / Rail
MJE15030G	TO-220 (Pb-Free)	50 Units / Rail
MJE15031	TO-220	50 Units / Rail
MJE15031G	TO-220 (Pb-Free)	50 Units / Rail

MJE15028, MJE15030 (NPN) MJE15029, MJE15031 (PNP)

PACKAGE DIMENSIONS

TO-220
CASE 221A-09
ISSUE AG



NOTES:

1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
2. CONTROLLING DIMENSION: INCH.
3. DIMENSION Z DEFINES A ZONE WHERE ALL BODY AND LEAD IRREGULARITIES ARE ALLOWED.

DIM	INCHES		MILLIMETERS	
	MIN	MAX	MIN	MAX
A	0.570	0.620	14.48	15.75
B	0.380	0.405	9.66	10.28
C	0.160	0.190	4.07	4.82
D	0.025	0.036	0.64	0.91
F	0.142	0.161	3.61	4.09
G	0.095	0.105	2.42	2.66
H	0.110	0.161	2.80	4.10
J	0.014	0.025	0.36	0.64
K	0.500	0.562	12.70	14.27
L	0.045	0.060	1.15	1.52
N	0.190	0.210	4.83	5.33
Q	0.100	0.120	2.54	3.04
R	0.080	0.110	2.04	2.79
S	0.045	0.055	1.15	1.39
T	0.235	0.255	5.97	6.47
U	0.000	0.050	0.00	1.27
V	0.045	---	1.15	---
Z	---	0.080	---	2.04

STYLE 1:

1. BASE
2. COLLECTOR
3. EMITTER
4. COLLECTOR

ON Semiconductor and  are registered trademarks of Semiconductor Components Industries, LLC (SCILLC). SCILLC reserves the right to make changes without further notice to any products herein. SCILLC makes no warranty, representation or guarantee regarding the suitability of its products for any particular purpose, nor does SCILLC assume any liability arising out of the application or use of any product or circuit, and specifically disclaims any and all liability, including without limitation special, consequential or incidental damages. "Typical" parameters which may be provided in SCILLC data sheets and/or specifications can and do vary in different applications and actual performance may vary over time. All operating parameters, including "Typicals" must be validated for each customer application by customer's technical experts. SCILLC does not convey any license under its patent rights nor the rights of others. SCILLC products are not designed, intended, or authorized for use as components in systems intended for surgical implant into the body, or other applications intended to support or sustain life, or for any other application in which the failure of the SCILLC product could create a situation where personal injury or death may occur. Should Buyer purchase or use SCILLC products for any such unintended or unauthorized application, Buyer shall indemnify and hold SCILLC and its officers, employees, subsidiaries, affiliates, and distributors harmless against all claims, costs, damages, and expenses, and reasonable attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized use, even if such claim alleges that SCILLC was negligent regarding the design or manufacture of the part. SCILLC is an Equal Opportunity/Affirmative Action Employer. This literature is subject to all applicable copyright laws and is not for resale in any manner.

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:

Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
Phone: 303-675-2175 or 800-344-3860 Toll Free USA/Canada
Fax: 303-675-2176 or 800-344-3867 Toll Free USA/Canada
Email: orderlit@onsemi.com

N. American Technical Support: 800-282-9855 Toll Free
USA/Canada

Europe, Middle East and Africa Technical Support:
Phone: 421 33 790 2910

Japan Customer Focus Center
Phone: 81-3-5817-1050

ON Semiconductor Website: www.onsemi.com

Order Literature: <http://www.onsemi.com/orderlit>

For additional information, please contact your local
Sales Representative

Данный компонент на территории Российской Федерации

Вы можете приобрести в компании MosChip.

Для оперативного оформления запроса Вам необходимо перейти по данной ссылке:

<http://moschip.ru/get-element>

Вы можете разместить у нас заказ для любого Вашего проекта, будь то серийное производство или разработка единичного прибора.

В нашем ассортименте представлены ведущие мировые производители активных и пассивных электронных компонентов.

Нашей специализацией является поставка электронной компонентной базы двойного назначения, продукции таких производителей как XILINX, Intel (ex.ALTERA), Vicor, Microchip, Texas Instruments, Analog Devices, Mini-Circuits, Amphenol, Glenair.

Сотрудничество с глобальными дистрибьюторами электронных компонентов, предоставляет возможность заказывать и получать с международных складов практически любой перечень компонентов в оптимальные для Вас сроки.

На всех этапах разработки и производства наши партнеры могут получить квалифицированную поддержку опытных инженеров.

Система менеджмента качества компании отвечает требованиям в соответствии с ГОСТ Р ИСО 9001, ГОСТ РВ 0015-002 и ЭС РД 009

Офис по работе с юридическими лицами:

105318, г.Москва, ул.Щербаковская д.3, офис 1107, 1118, ДЦ «Щербаковский»

Телефон: +7 495 668-12-70 (многоканальный)

Факс: +7 495 668-12-70 (доб.304)

E-mail: info@moschip.ru

Skype отдела продаж:

moschip.ru

moschip.ru_4

moschip.ru_6

moschip.ru_9