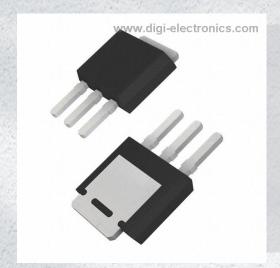


MJD44H11-1G Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number MJD44H11-1G-DG

Manufacturer onsemi

Manufacturer Product Number MJD44H11-1G

Description TRANS NPN 80V 8A IPAK

Detailed Description Bipolar (BJT) Transistor NPN 80 V 8 A 85MHz 1.75 W

Through Hole I-PAK



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.



Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
MJD44H11-1G	onsemi
Series:	Product Status:
	Active
Transistor Type:	Current - Collector (Ic) (Max):
NPN	8 A
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ lb, lc:
80 V	1V @ 400mA, 8A
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ lc, Vce:
1μΑ	40 @ 4A, 1V
Power - Max:	Frequency - Transition:
1.75 W	85MHz
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Through Hole
Package / Case:	Supplier Device Package:
TO-251-3 Short Leads, IPak, TO-251AA	I-PAK
Base Product Number:	
MJD44	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.29.0075	



Complementary Power Transistors

DPAK for Surface Mount Applications

MJD44H11 (NPN), MJD45H11 (PNP)

Designed for general purpose power and switching such as output or driver stages in applications such as switching regulators, converters, and power amplifiers.

Features

- Lead Formed for Surface Mount Application in Plastic Sleeves
- Straight Lead Version in Plastic Sleeves ("-1" Suffix)
- Electrically Similar to Popular D44H/D45H Series
- Low Collector Emitter Saturation Voltage
- Fast Switching Speeds
- Complementary Pairs Simplifies Designs
- Epoxy Meets UL 94 V-0 @ 0.125 in
- NJV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable
- These Devices are Pb-Free, Halogen Free/BFR Free and are RoHS

MAXIMUM RATINGS (T_A = 25°C, common for NPN and PNP, minus sign, "-", for PNP omitted, unless otherwise noted)

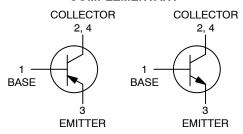
Rating	Symbol	Max	Unit
Collector-Emitter Voltage	V_{CEO}	80	Vdc
Emitter-Base Voltage	V_{EB}	5	Vdc
Collector Current - Continuous	Ic	8	Adc
Collector Current - Peak	I _{CM}	16	Adc
Total Power Dissipation @ T _C = 25°C Derate above 25°C	P _D	20 0.16	W W/°C
Total Power Dissipation (Note 1) @ T _A = 25°C Derate above 25°C	P _D	1.75 0.014	W W/°C
Operating and Storage Junction Temperature Range	T _J , T _{stg}	-55 to +150	°C
ESD – Human Body Model	HBM	3B	V
ESD - Machine Model	MM	С	V

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

1. These ratings are applicable when surface mounted on the minimum pad sizes recommended.

SILICON **POWER TRANSISTORS** 8 AMPERES 80 VOLTS, 20 WATTS

COMPLEMENTARY







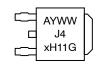


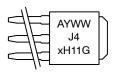
DPAK CASE 369C STYLE 1

DPAK **CASE 369G** STYLE 1

IPAK CASE 369D STYLE 1

MARKING DIAGRAMS





DPAK Α

IPAK Assembly Location

Year WW Work Week J4xH11 Device Code x = 4 or 5

Pb-Free Package

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 7 of this data sheet.

THERMAL CHARACTERISTICS

Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction-to-Case	$R_{ heta JC}$	6.25	°C/W
Thermal Resistance, Junction-to-Ambient (Note 2)	$R_{\theta JA}$	71.4	°C/W
Lead Temperature for Soldering	TL	260	°C

^{2.} These ratings are applicable when surface mounted on the minimum pad sizes recommended.

ELECTRICAL CHARACTERISTICS

 $(T_A = 25^{\circ}C, common for NPN and PNP, minus sign, "-", for PNP omitted, unless otherwise noted)$

Characteristic	Symbol	Min	Тур	Max	Unit		
OFF CHARACTERISTICS							
Collector–Emitter Sustaining Voltage $(I_C = 30 \text{ mA}, I_B = 0)$	V _{CEO(sus)}	80	_	-	Vdc		
Collector Cutoff Current (V _{CE} = Rated V _{CEO} , V _{BE} = 0)	I _{CES}	-	-	1.0	μΑ		
Emitter Cutoff Current (V _{EB} = 5 Vdc)	I _{EBO}	-	-	1.0	μΑ		
ON CHARACTERISTICS					_		
	V _{CE(sat)}	-	_	1	Vdc		
Base-Emitter Saturation Voltage (I _C = 8 Adc, I _B = 0.8 Adc)	V _{BE(sat)}	-	-	1.5	Vdc		
DC Current Gain	h _{FE}	60 40	- -	- -	-		
DYNAMIC CHARACTERISTICS					_		
Collector Capacitance (V _{CB} = 10 Vdc, f _{test} = 1 Mhz) MJD44H11 MJD45H11	C _{cb}	- -	45 130	- -	pF		
Gain Bandwidth Product (I _C = 0.5 Adc, V _{CE} = 10 Vdc, f = 20 Mhz) MJD44H11 MJD45H11	f _T	- -	85 90	- -	MHz		
SWITCHING TIMES	-	-	•		·		
Delay and Rise Times (I _C = 5 Adc, I _{B1} = 0.5 Adc) MJD44H11 MJD45H11	t _d + t _r	- -	300 135	- -	ns		
Storage Time (I _C = 5 Adc, I _{B1} = I _{B2} = 0.5 Adc) MJD44H11 MJD45H11	t _s	- -	500 500		ns		
Fall Time (I _C = 5 Adc, I _{B1} = I _{B2} = 0.5 Adc) MJD44H11 MJD45H11	t _f	- -	140 100	<u>-</u>	ns		

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

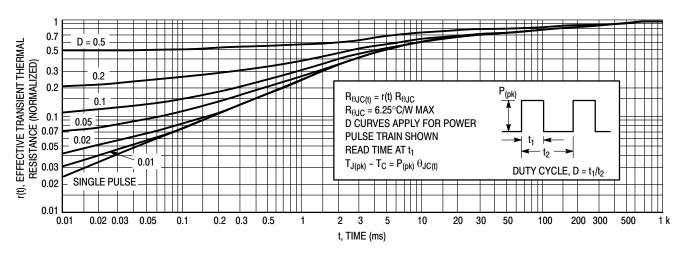


Figure 1. Thermal Response

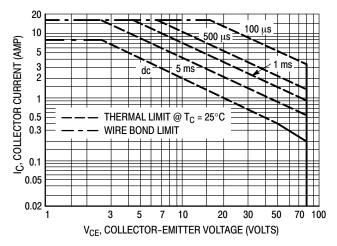


Figure 2. Maximum Forward Bias Safe Operating Area

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

The data of Figure 2 is based on $T_{J(pk)} = 150^{\circ} C$; T_{C} is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(pk)} \le 150^{\circ} C$. $T_{J(pk)}$ may be calculated from the data in Figure 1. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

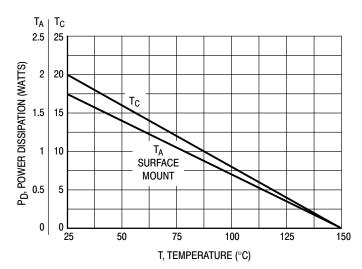


Figure 3. Power Derating

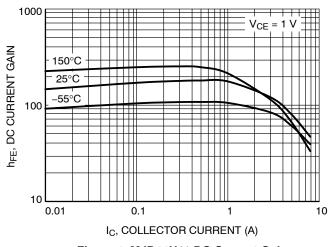


Figure 4. MJD44H11 DC Current Gain

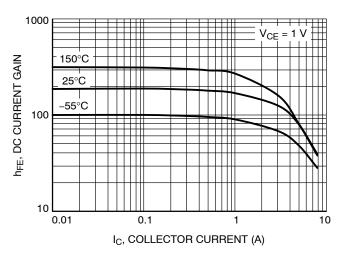


Figure 5. MJD45H11 DC Current Gain

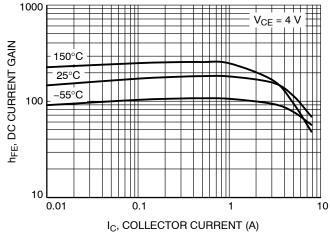


Figure 6. MJD44H11 DC Current Gain

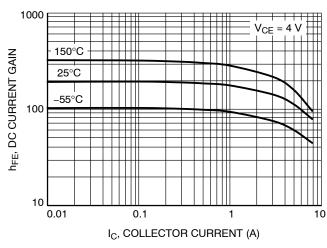


Figure 7. MJD45H11 DC Current Gain

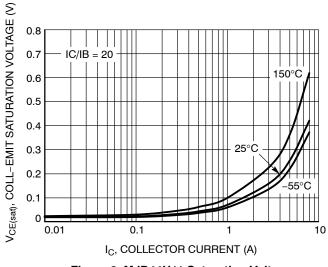


Figure 8. MJD44H11 Saturation Voltage $V_{CE(sat)}$

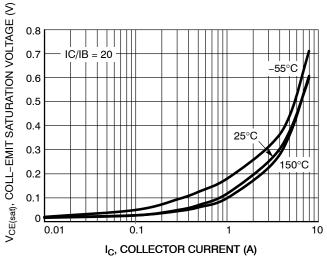


Figure 9. MJD45H11 Saturation Voltage $V_{CE(sat)}$

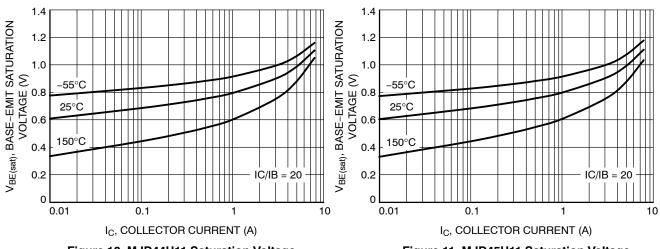


Figure 10. MJD44H11 Saturation Voltage $V_{BE(sat)}$

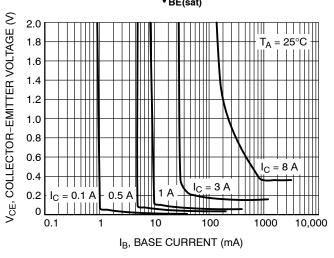


Figure 12. MJD44H11 Collector Saturation Region

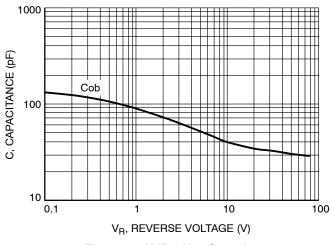


Figure 14. MJD44H11 Capacitance



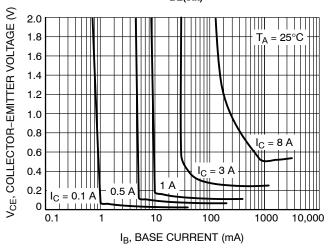


Figure 13. MJD45H11 Collector Saturation Region

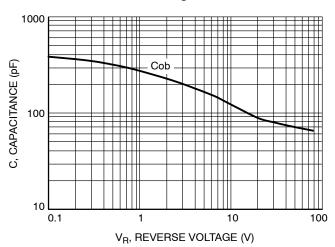
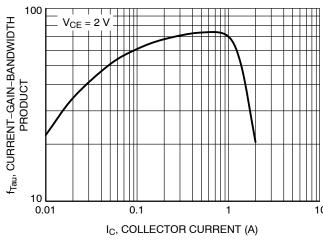


Figure 15. MJD45H11 Capacitance



I_C, COLLECTOR CURRENT (A)

Figure 16. MJD44H11

Current-Gain-Bandwidth Product

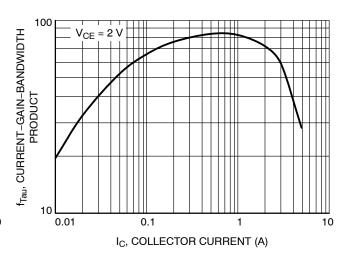


Figure 17. MJD45H11 Current-Gain-Bandwidth Product

ORDERING INFORMATION

Device	Package Type	Package	Shipping [†]
MJD44H11G	DPAK (Pb-Free)	369C	75 Units / Rail
NJVMJD44H11G	DPAK (Pb-Free)	369C	75 Units / Rail
MJD44H11-1G	DPAK-3 (Pb-Free)	369D	75 Units / Rail
MJD44H11RLG	DPAK (Pb-Free)	369C	1,800 / Tape & Reel
NJVMJD44H11RLG*	DPAK (Pb-Free)	369C	1,800 / Tape & Reel
MJD44H11T4G	DPAK (Pb-Free)	369C	2,500 / Tape & Reel
NJVMJD44H11T4G*	DPAK (Pb-Free)	369C	2,500 / Tape & Reel
MJD44H11T5G	DPAK (Pb-Free)	369C	2,500 / Tape & Reel
MJD45H11G	DPAK (Pb-Free)	369C	75 Units / Rail
NJVMJD45H11G*	DPAK (Pb-Free)	369C	75 Units / Rail
MJD45H11-1G	DPAK-3 (Pb-Free)	369D	75 Units / Rail
MJD45H11RLG	DPAK (Pb-Free)	369C	1,800 / Tape & Reel
NJVMJD45H11RLG*	DPAK (Pb-Free)	369C	1,800 / Tape & Reel
MJD45H11T4G	DPAK (Pb-Free)	369C	2,500 / Tape & Reel
NJVMJD45H11T4G*	DPAK (Pb-Free)	369C	2,500 / Tape & Reel
NJVMJD44H11D3T4G*	DPAK (Pb-Free)	369G	2,500 / Tape & Reel
NJVMJD45H11D3T4G*	DPAK (Pb-Free)	369G	2,500 / Tape & Reel

[†]For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

^{*}NJV Prefix for Automotive and Other Applications Requiring Unique Site and Control Change Requirements; AEC-Q101 Qualified and PPAP Capable



MECHANICAL CASE OUTLINE

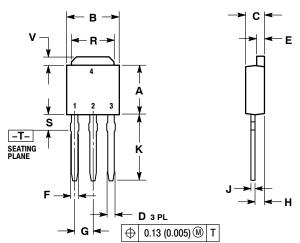
PACKAGE DIMENSIONS

DPAK INSERTION MOUNT

CASE 369 ISSUE O

DATE 02 JAN 2000





- NOTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI
- Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.

	INC	HES	MILLIM	IETERS	
DIM	MIN	MAX	MIN	MAX	
Α	0.235	0.250	5.97	6.35	
В	0.250	0.265	6.35	6.73	
С	0.086	0.094	2.19	2.38	
D	0.027	0.035	0.69	0.88	
Е	0.033	0.040	0.84	1.01	
F	0.037	0.047	0.94	1.19	
G	0.090	BSC	2.29 BSC		
Н	0.034	0.040	0.87	1.01	
J	0.018	0.023	0.46	0.58	
K	0.350	0.380	8.89	9.65	
R	0.175	0.215	4.45	5.46	
S	0.050	0.090	1.27	2.28	
٧	0.030	0.050	0.77	1 27	

STYLE 1:		STYLE 2:		STYLE 3:		STYLE 4:		STYLE 5:		STYLE 6:	
PIN 1.	BASE	PIN 1.	GATE	PIN 1.	ANODE	PIN 1.	CATHODE	PIN 1.	GATE	PIN 1.	MT1
2.	COLLECTOR	2.	DRAIN	2.	CATHODE	2.	ANODE	2.	ANODE	2.	MT2
3.	EMITTER	3.	SOURCE	3.	ANODE	3.	GATE	3.	CATHODE	3.	GATE
4.	COLLECTOR	4.	DRAIN	4.	CATHODE	4.	ANODE	4.	ANODE	4.	MT2

DOCUMENT NUMBER:	98ASB42319B	Electronic versions are uncontrolled except when accessed directly from the Document Repos Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.		
DESCRIPTION:	DPAK INSERTION MOUNT		PAGE 1 OF 1	

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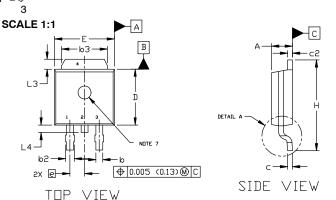


MECHANICAL CASE OUTLINE

PACKAGE DIMENSIONS

DPAK (SINGLE GAUGE) CASE 369C **ISSUE G**

DATE 31 MAY 2023



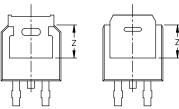


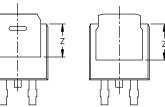
- DIMENSIONING AND TOLERANCING ASME Y14.5M, 1994. CONTROLLING DIMENSION: INCHES
- THERMAL PAD CONTOUR OPTIONAL WITHIN DIMENSIONS 63, L3. AND Z.
- L3, AND Z.

 DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH,
 PROTRUSIONS, OR BURRS. MOLD FLASH, PROTRUSIONS, OR
 GATE BURRS SHALL NOT EXCEED 0.006 INCHES PER SIDE.
 DIMENSIONS D AND E ARE DETERMINED AT THE
 OUTERMOST EXTREMES OF THE PLASTIC BODY.
 DATUMS A AND B ARE DETERMINED AT DATUM PLANE H.
 DETININAL MOLD ESCALUPE.

- OPTIONAL MOLD FEATURE.

DIM	INC	HES	MILLIMETERS		
ויונע	MIN.	MAX.	MIN.	MAX.	
Α	0.086	0.094	2.18	2.38	
A1	0.000	0.005	0.00	0.13	
b	0.025	0.035	0.63	0.89	
b2	0.028	0.045	0.72	1.14	
b3	0.180	0.215	4.57	5.46	
C	0.018	0.024	0.46	0.61	
c2	0.018	0.024	0.46	0.61	
D	0.235	0.245	5.97	6.22	
Ε	0.250	0.265	6.35	6.73	
е	0.090	BSC	2.29 BSC		
Н	0.370	0.410	9.40	10.41	
L	0.055	0.070	1.40	1.78	
L1	0.114	REF	2.90	REF	
L2	0.020	BSC	0.51	BSC	
L3	0.035	0.050	0.89	1.27	
L4		0.040		1.01	
Z	0.155		3.93		





Н

Δ1

CW

Δ

С

4. ANODE

BOTTOM VIEW

2.58

[0.102]

1.60

5.80

6.17 [0.243] RECOMMENDED MOUNTING FOOTPRINT*

*FOR ADDITIONAL INFORMATION ON OUR PB-FREE STRATEGY AND SOLDERING DETAILS, PLEASE DUWNLOAD THE ON SEMICONDUCTOR SOLDERING AND MOUNTING TECHNIQUES REFERENCE MANUAL, SOLDERRM/D.

4. COLLECTOR

BOTTOM VIEW AL TERNATE

CONSTRUCTIONS [0.228] 6.20 -L2 GAUGE PLANE [0.244] 3.00 [0.118] DETAIL ROTATED 90° [0.063]





GENERIC

XXXXXXX **AYWW ALYWW** XXX XXXXXG IC Discrete

XXXXXX	= Device Code
Α	= Assembly Location
L	= Wafer Lot
Υ	= Year
WW	= Work Week
G	= Pb-Free Package

STYLE 1: PIN 1. BASE STYLE 2: PIN 1. GATE STYLE 3: PIN 1. ANODE STYLE 4: PIN 1. CATHODE STYLE 5: PIN 1. GATE 2. COLLECTOR 2. DRAIN 2. CATHODE 2. ANODE 2. ANODE 3 SOURCE 3 CATHODE 3 FMITTER 3 ANODE 3 GATE COLLECTOR 4. DRAIN CATHODE 4. ANODE ANODE

STYLE 6: STYLE 7: PIN 1. GATE 2. COLLECTOR STYLE 8: STYLE 9: STYLE 10: PIN 1. MT1 2. MT2 PIN 1. N/C 2. CATHODE 3. ANODE PIN 1. ANODE 2. CATHODE PIN 1. CATHODE 2. ANODE 3 CATHODE 3 FMITTER 3 RESISTOR ADJUST 3 GATE

4. CATHODE

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "■", may or may not be present. Some products may not follow the Generic Marking.

DOCUMENT NUMBER:	98AON10527D	Electronic versions are uncontrolled except when accessed directly from Printed versions are uncontrolled except when stamped "CONTROLLED"	
DESCRIPTION:	DPAK (SINGLE GAUGE)		PAGE 1 OF 1

CATHODE

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MECHANICAL CASE OUTLINE

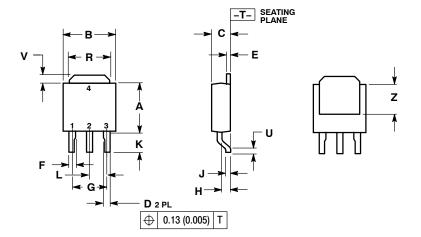
PACKAGE DIMENSIONS

DPAK-3, SURFACE MOUNT

CASE 369G **ISSUE O**

DATE 23 DEC 2003

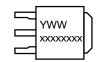




- NOTES:
 1. DIMENSIONING AND TOLERANCING PER ANSI Y14.5M, 1982.
 2. CONTROLLING DIMENSION: INCH.

	INCHES		MILLIMETERS	
DIM	MIN	MAX	MIN	MAX
Α	0.235	0.245	5.97	6.22
В	0.250	0.265	6.35	6.73
С	0.086	0.094	2.19	2.38
D	0.027	0.035	0.69	0.88
E	0.018	0.023	0.46	0.58
F	0.037	0.045	0.94	1.14
G	0.180 BSC		4.58 BSC	
Н	0.034	0.040	0.87	1.01
J	0.018	0.023	0.46	0.58
K	0.102	0.114	2.60	2.89
L	0.090 BSC		2.29 BSC	
R	0.180	0.215	4.57	5.45
U	0.020		0.51	
V	0.035	0.050	0.89	1.27
7	0.155		3 93	

GENERIC MARKING DIAGRAM*



xxxxxxxxx = Device Code Υ = Year ww = Work Week

STYLE 1:	STYLE 2:	STYLE 3:	STYLE 4:
PIN 1. BASE	PIN 1. GATE	PIN 1. ANODE	PIN 1. CATHODE
2. COLLECTOR	2. DRAIN	2. CATHODE	ANODE
EMITTER	SOURCE	3. ANODE	GATE
COLLECTOR	4. DRAIN	4. CATHODE	4. ANODE
STYLE 5:	STYLE 6:	STYLE 7:	
PIN 1. GATE	PIN 1. MT1	PIN 1. GATE	
2. ANODE	2. MT2	2. COLLECTOR	
CATHODE	3. GATE	3. EMITTER	
4 ANODE	4 MT2	4 COLLECTOR	

DOCUMENT NUMBER:	98AON13702D	Electronic versions are uncontrolled except when accessed directly from the Document Repository. Printed versions are uncontrolled except when stamped "CONTROLLED COPY" in red.		
DESCRIPTION:	DPAK-3, SURFACE MOUNT		PAGE 1 OF 1	

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