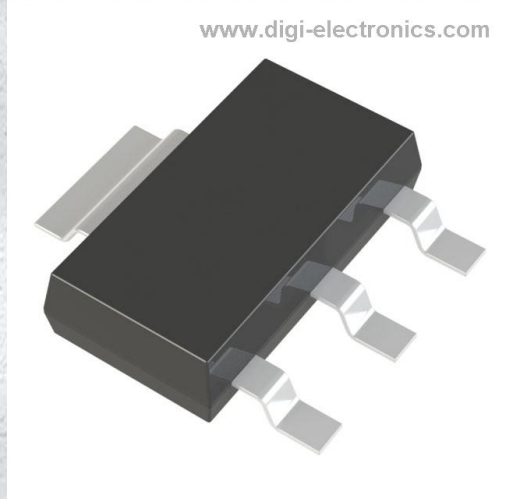
DCP68-25-13 Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number	DCP68-25-13-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	DCP68-25-13
Description	TRANS NPN 20V 1A SOT223-3
Detailed Description	Bipolar (BJT) Transistor NPN 20 V 1 A 330MHz 1 W Surface Mount SOT-223-3

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
DCP68-25-13	Diodes Incorporated
Series:	Product Status:
-	Obsolete
Transistor Type:	Current - Collector (Ic) (Max):
NPN	1 A
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ Ib, Ic:
20 V	500mV @ 100mA, 1A
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ Ic, Vce:
100nA (ICBO)	160 @ 500mA, 1V
Power - Max:	Frequency - Transition:
1 W	330MHz
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Surface Mount
Package / Case:	Supplier Device Package:
TO-261-4, TO-261AA	SOT-223-3
Base Product Number:	
DCP68	

Environmental & Export classification

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

Lead-free Green

DCP68/-25

20V NPN MEDIUM POWER TRANSISTOR IN SOT223

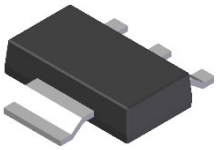
Features

- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DCP69)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen, Antimony and Beryllium Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

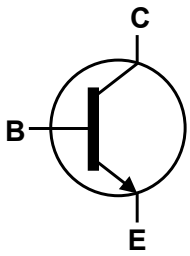
Mechanical Data

- Case: SOT223
- Case Material: Molded Plastic, "Green Molding" Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish—Matte Tin
- Solderable per MIL-STD -202, Method 208
- Weight: 0.112 grams (Approximate)

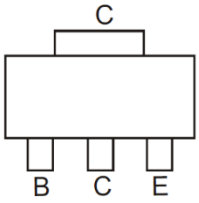
SOT223



Top View



Device Symbol



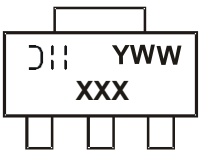
Top View
Pin Out Configuration

Ordering Information (Note 4)

Part Number	Status	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
DCP68-13	Active	Standard	N12	13	12	2,500
DCP68-25-13	Obsolete	Standard	N12-25	13	12	2,500

Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen, Antimony and Beryllium-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl), <1000ppm antimony compounds and <1000ppm Beryllium.
4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



xxx = Product Type Marking Code:
N12 = DCP68
N12-25 = DCP68-25
= Manufacturer's code marking
YWW = Date Code Marking
Y = Last digit of year (ex: 1 = 2021)
WW = Week code (01 – 53)

Maximum Ratings @ T_A = 25°C unless otherwise specified

Characteristic	Symbol	Value	Units
Collector-Base Voltage	V_{CBO}	25	V
Collector-Emitter Voltage	V_{CEO}	20	V
Emitter-Base Voltage	V_{EBO}	5.0	V
Continuous Collector Current	I_C	1.0	A

Thermal Characteristics @ T_A = 25°C unless otherwise specified

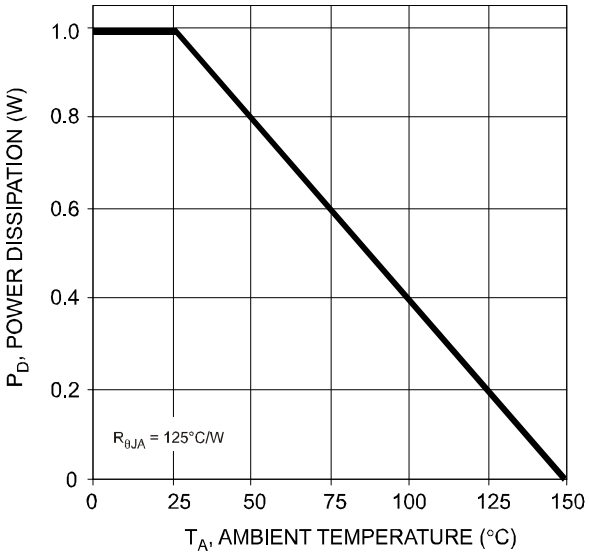
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	1	W
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	125	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to 150	°C

Electrical Characteristics @ T_A = 25°C unless otherwise specified

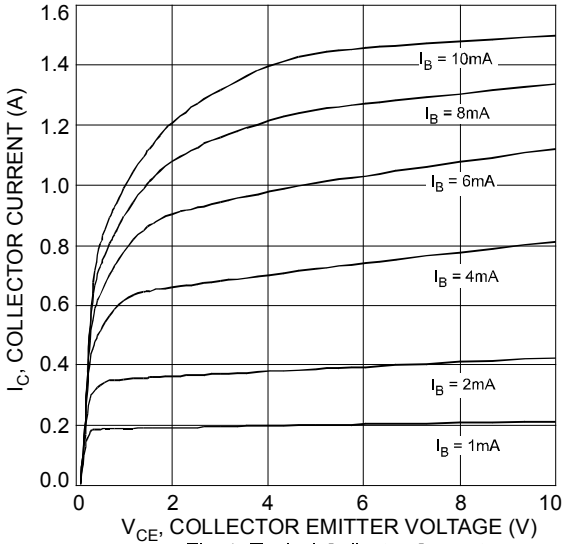
Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 6)							
Collector-Emitter Breakdown Voltage		BV_{CES}	25	—	—	V	I_C = 100μA, I_E = 0
Collector-Emitter Breakdown Voltage		BV_{CEO}	20	—	—	V	I_C = 1.0mA, I_B = 0
Collector-Base Breakdown Voltage		BV_{CBO}	25	—	—	V	I_C = 10μA, I_E = 0
Emitter-Base Breakdown Voltage		BV_{EBO}	5.0	—	—	V	I_E = 10μA, I_C = 0
Collector-Base Cut-Off Current		I_{CBO}	—	—	100	nA	V_{CB} = 25V, I_E = 0
Emitter-Base Cut-Off Current		I_{EBO}	—	—	10	μA	V_{EB} = 5.0V, I_C = 0
ON CHARACTERISTICS (Note 6)							
DC Current Gain	DCP68, DCP68-25	h_{FE}	50 60	— —	— —	—	V_{CE} = 10V, I_C = 5.0mA V_{CE} = 1.0V, I_C = 1.0A
	DCP68		85	—	375		V_{CE} = 1.0V, I_C = 500mA
	DCP68-25		160	—	375		V_{CE} = 1.0V, I_C = 500mA
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	—	—	0.5	V	I_C = 1.0A, I_B = 100mA
Base-Emitter Turn-On Voltage		$V_{BE\ (on)}$	—	—	1.0	V	V_{CE} = 1.0V, I_C = 1.0A
SMALL SIGNAL CHARACTERISTICS							
Transition frequency		f_T	—	330	—	MHz	I_C = 100mA, V_{CE} = 5.0V f = 100MHz

Notes: 5. For a device mounted on minimum recommended pad layout 1oz weight copper that is on a single-sided FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

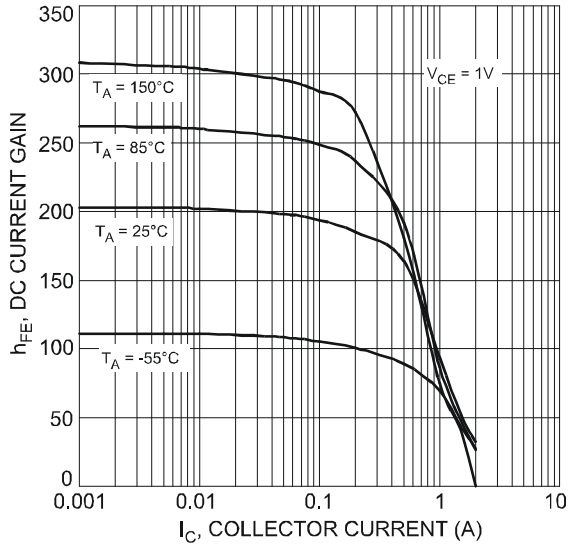
Typical Electrical Characteristics (@ T_A = +25°C, unless otherwise specified.)



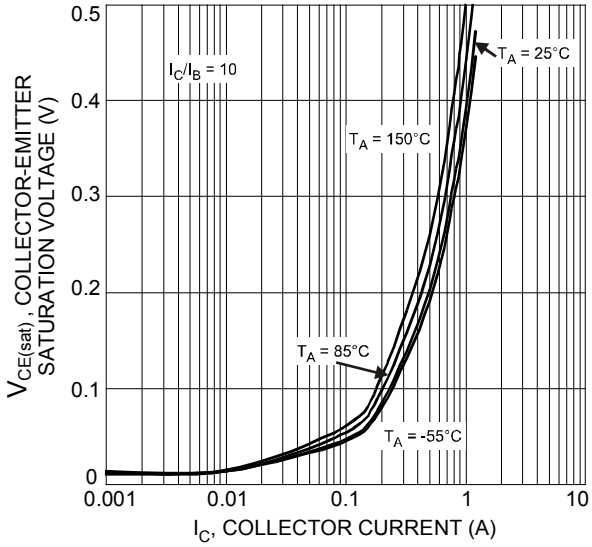
P_D v T_A



I_C v V_{CE}

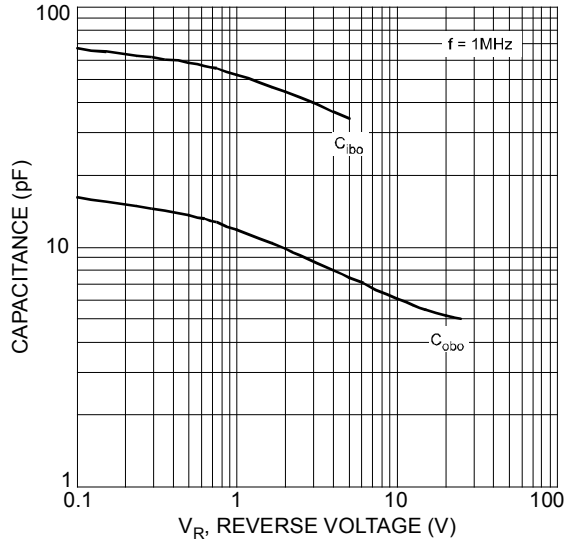


h_{FE} v I_C

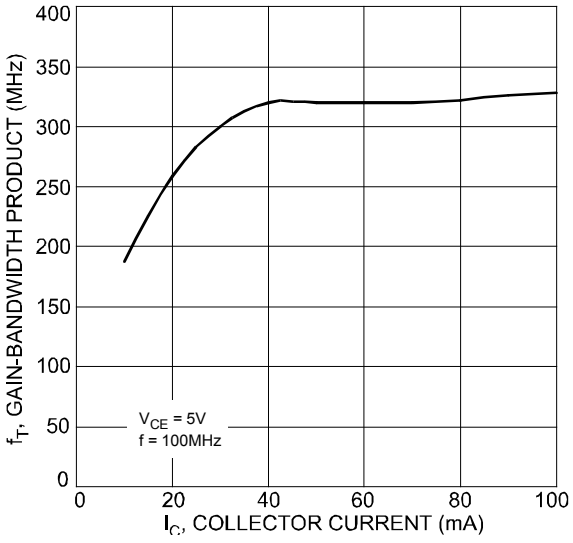


$V_{CE(sat)}$ v I_C

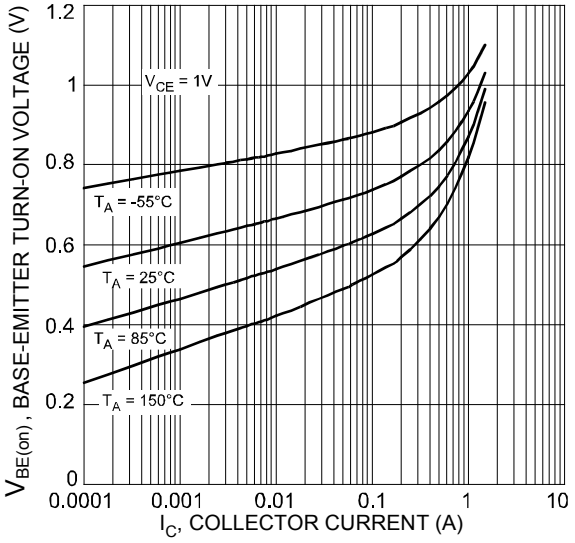
Typical Electrical Characteristics (@ T_A = +25°C, unless otherwise specified.)



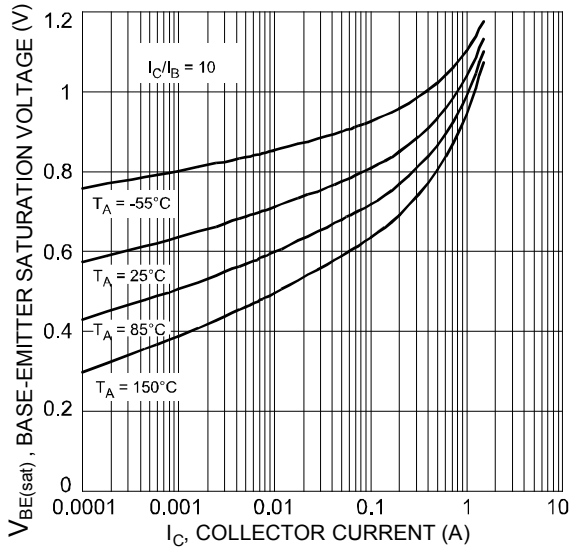
C v V_R



f_T v I_C



$V_{BE(on)}$ v I_C

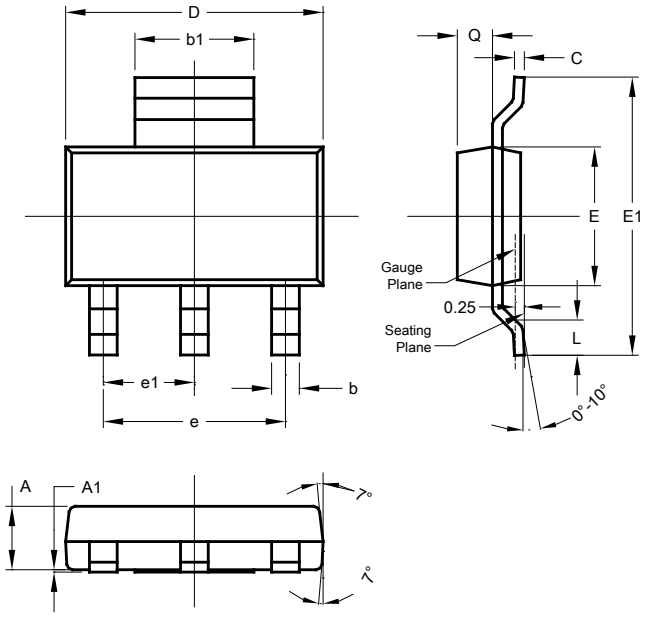


$V_{BE(sat)}$ v I_C

Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT223

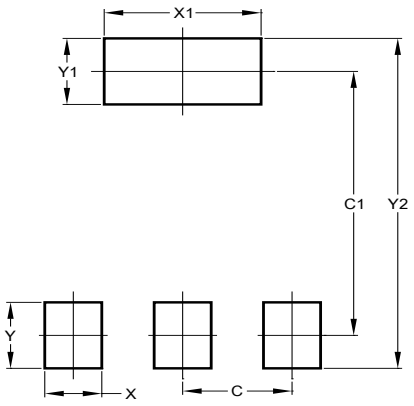


SOT223			
Dim	**Min**	**Max**	**Typ**
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	—	—	4.60
e1	—	—	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

SOT223



Dimensions	Value (in mm)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

IMPORTANT NOTICE

1. DIODES INCORPORATED AND ITS SUBSIDIARIES ("DIODES") MAKE NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO ANY INFORMATION CONTAINED IN THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

2. The Information contained herein is for informational purpose only and is provided only to illustrate the operation of Diodes products described herein and application examples. Diodes does not assume any liability arising out of the application or use of this document or any product described herein. This document is intended for skilled and technically trained engineering customers and users who design with Diodes products. Diodes products may be used to facilitate safety-related applications; however, in all instances customers and users are responsible for (a) selecting the appropriate Diodes products for their applications, (b) evaluating the suitability of the Diodes products for their intended applications, (c) ensuring their applications, which incorporate Diodes products, comply the applicable legal and regulatory requirements as well as safety and functional-safety related standards, and (d) ensuring they design with appropriate safeguards (including testing, validation, quality control techniques, redundancy, malfunction prevention, and appropriate treatment for aging degradation) to minimize the risks associated with their applications.

3. Diodes assumes no liability for any application-related information, support, assistance or feedback that may be provided by Diodes from time to time. Any customer or user of this document or products described herein will assume all risks and liabilities associated with such use, and will hold Diodes and all companies whose products are represented herein or on Diodes' websites, harmless against all damages and liabilities.

4. Products described herein may be covered by one or more United States, international or foreign patents and pending patent applications. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks and trademark applications. Diodes does not convey any license under any of its intellectual property rights or the rights of any third parties (including third parties whose products and services may be described in this document or on Diodes' website) under this document.

5. Diodes products are provided subject to Diodes' Standard Terms and Conditions of Sale (https://www.diodes.com/about/company/terms-and-conditions/terms-and-conditions-of-sales/) or other applicable terms. This document does not alter or expand the applicable warranties provided by Diodes. Diodes does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel.

6. Diodes products and technology may not be used for or incorporated into any products or systems whose manufacture, use or sale is prohibited under any applicable laws and regulations. Should customers or users use Diodes products in contravention of any applicable laws or regulations, or for any unintended or unauthorized application, customers and users will (a) be solely responsible for any damages, losses or penalties arising in connection therewith or as a result thereof, and (b) indemnify and hold Diodes and its representatives and agents harmless against any and all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim relating to any noncompliance with the applicable laws and regulations, as well as any unintended or unauthorized application.

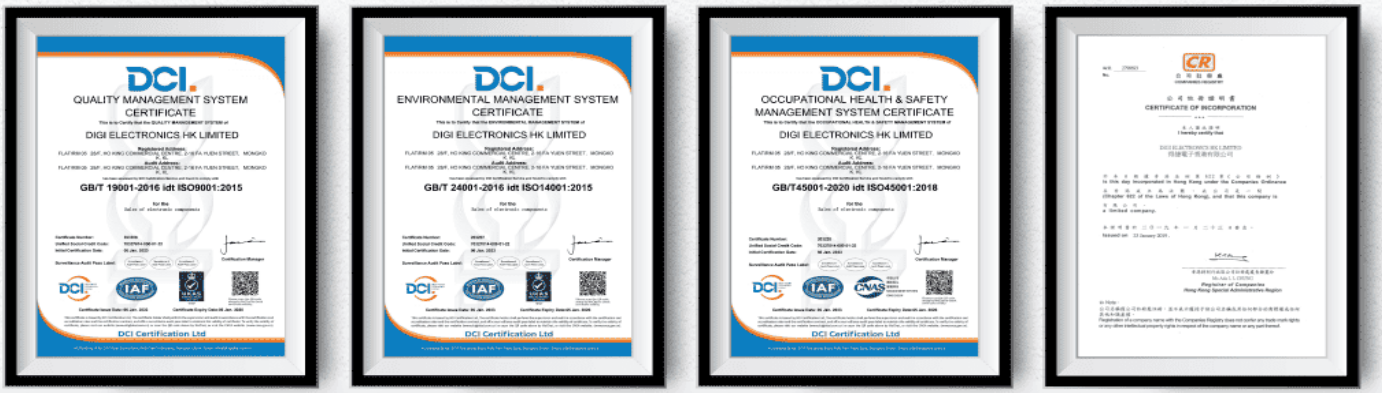
7. While efforts have been made to ensure the information contained in this document is accurate, complete and current, it may contain technical inaccuracies, omissions and typographical errors. Diodes does not warrant that information contained in this document is error-free and Diodes is under no obligation to update or otherwise correct this information. Notwithstanding the foregoing, Diodes reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes.

8. Any unauthorized copying, modification, distribution, transmission, display or other use of this document (or any portion hereof) is prohibited. Diodes assumes no responsibility for any losses incurred by the customers or users or any third parties arising from any such unauthorized use.

www.diodes.com

OUR CERTIFICATE

DiGi provide top-quality products and perfect service for customer worldwide through standardization, technological innovation and continuous improvement. DiGi through third-party certification, we striciy control the quality of products and services. Welcome your RFQ to Email: Info@DiGi-Electronics.com



Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.