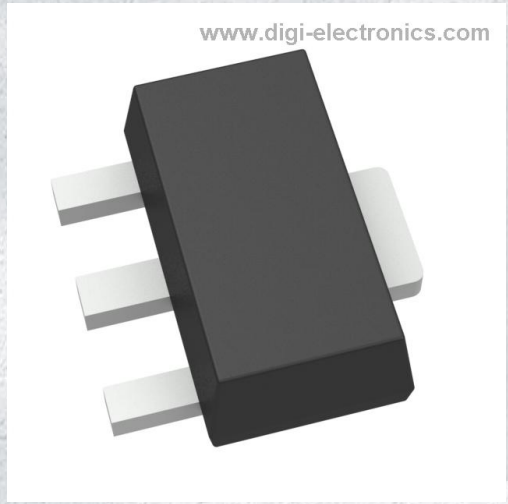
2DB1188Q-13 Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number	2DB1188Q-13-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	2DB1188Q-13
Description	TRANS PNP 32V 2A SOT89-3
Detailed Description	Bipolar (BJT) Transistor PNP 32 V 2 A 120MHz 1 W Surface Mount SOT-89-3

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
2DB1188Q-13	Diodes Incorporated
Series:	Product Status:
-	Active
Transistor Type:	Current - Collector (Ic) (Max):
PNP	2 A
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ Ib, Ic:
32 V	800mV @ 200mA, 2A
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ Ic, Vce:
100nA (ICBO)	120 @ 500mA, 3V
Power - Max:	Frequency - Transition:
1 W	120MHz
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Surface Mount
Package / Case:	Supplier Device Package:
TO-243AA	SOT-89-3
Base Product Number:	
2DB1188	

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

2DB1188P/Q/R

32V PNP MEDIUM POWER TRANSISTOR IN SOT89

Features

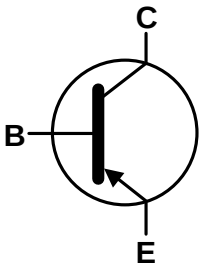
- BV_{CEO} > -32V
- I_C = -2A High Continuous Current
- Low Saturation Voltage $V_{CE(sat)}$ < -800mV @ -2A
- Complementary NPN Type: 2DD1766
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring 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

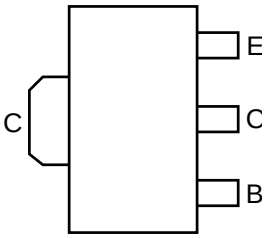
- Package: SOT89
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (e3)
- Weight: 0.052 grams (Approximate)

SOT89

Top View



Device Symbol



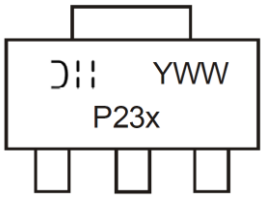
Pin Out – Top View

Ordering Information (Note 4)

Part Number	Status	Compliance	Marking Code	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
2DB1188P-13	Obsolete	Standard	P23P	13	12	2,500
2DB1188Q-13	Active	Standard	P23Q	13	12	2,500
2DB1188Q-13R	Active	Standard	P23Q	13	12	4,000
2DB1188R-13	Active	Standard	P23R	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- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

Marking Information



P23x = Product Type Marking Code
Where P23P = 2DB1188P
P23Q = 2DB1188Q
P23R = 2DB1188R
= Manufacturers' Code Marking
YWW = Date Code Marking
Y or $\overline{Y}$= Last Digit of Year (ex: 1 = 2021)
WW = Week Code (01 to 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

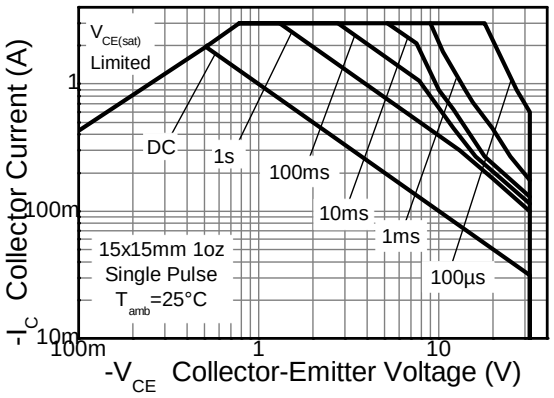
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-40	V
Collector-Emitter Voltage	V_{CEO}	-32	V
Emitter-Base Voltage	V_{EBO}	-6	V
Continuous Collector Current	I_C	-2	A
Peak Pulse Collector Current	I_{CM}	-3	A
Base Current	I_B	-500	mA

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

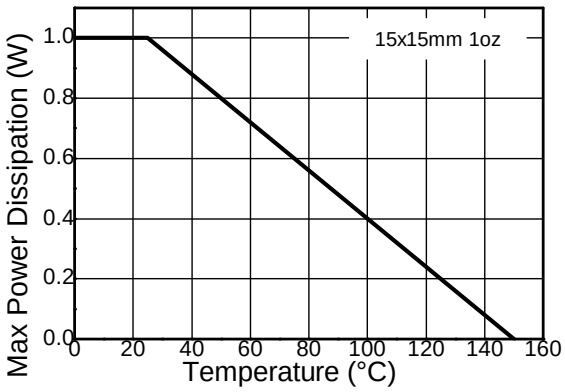
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	1	W
Thermal Resistance, Junction to Ambient (Note 5)	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction to Leads (Note 6)	$R_{\theta JL}$	19	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Notes: 5. For a device surface mounted on 15mm x 15mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
6. Thermal resistance from junction to solder-point (on the exposed collector pad).

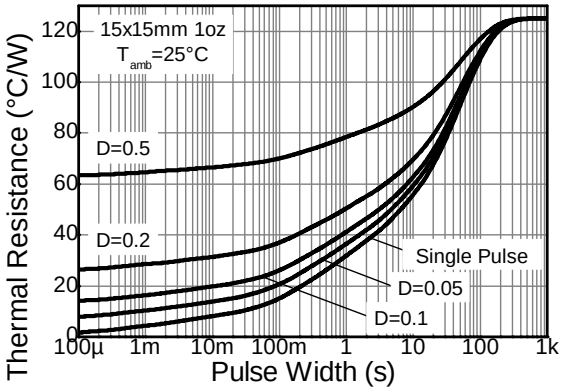
Thermal Characteristics and Derating Information



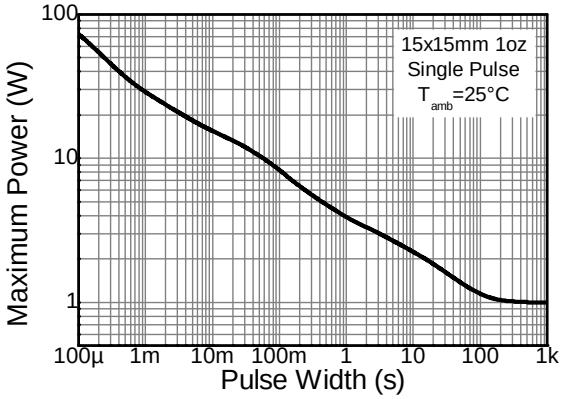
Safe Operating Area



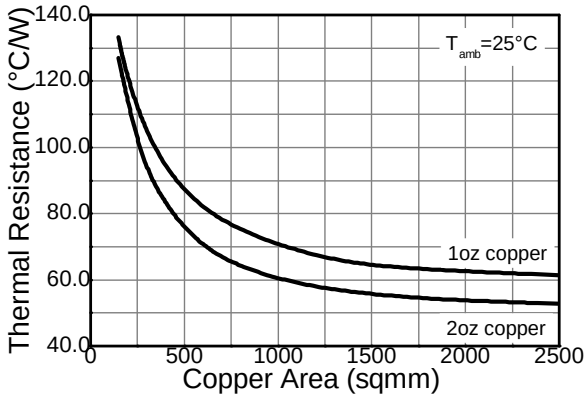
Derating Curve



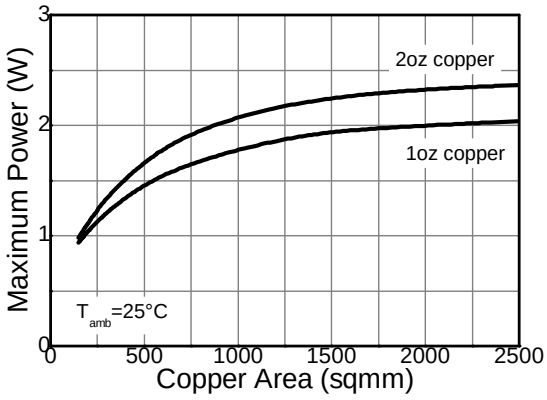
Transient Thermal Impedance



Pulse Power Dissipation



R_{TH} vs Area



P_D vs Area

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

Characteristic		Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 7)							
Collector-Base Breakdown Voltage		BV_{CBO}	-40	—	—	V	I_C = -100μA
Collector-Emitter Breakdown Voltage		BV_{CEO}	-32	—	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage		BV_{EBO}	-6	—	—	V	I_E = -100μA
Collector Cutoff Current		I_{CBO}	—	—	-100	nA	V_{CB} = -20V
Emitter Cutoff Current		I_{EBO}	—	—	-100	nA	V_{EB} = - 5V
ON CHARACTERISTICS (Note 7)							
Collector-Emitter Saturation Voltage		$V_{CE(sat)}$	—	-0.35	-0.8	V	I_C = -2A, I_B = -0.2A
DC Current Gain	2DB1188P	h_{FE}	82	—	180	—	V_{CE} = -3V, I_C = -0.5A
	2DB1188Q		120		270		
	2DB1188R		180		390		
SMALL SIGNAL CHARACTERISTICS							
Current Gain-Bandwidth Product		f_T	—	120	—	MHz	V_{CE} = -5V, I_C = -0.1A, f = 30MHz
Output Capacitance		C_{obo}	—	20	—	pF	V_{CB} = -10V, f = 1MHz

Note: 7. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

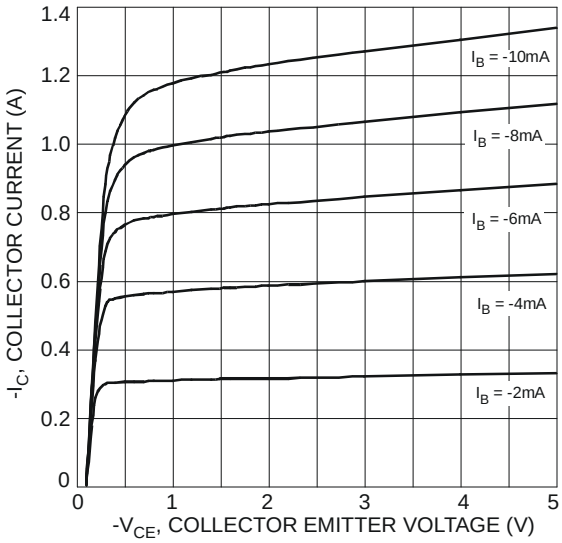


Figure 1. Typical Collector Current vs. Collector-Emitter Voltage

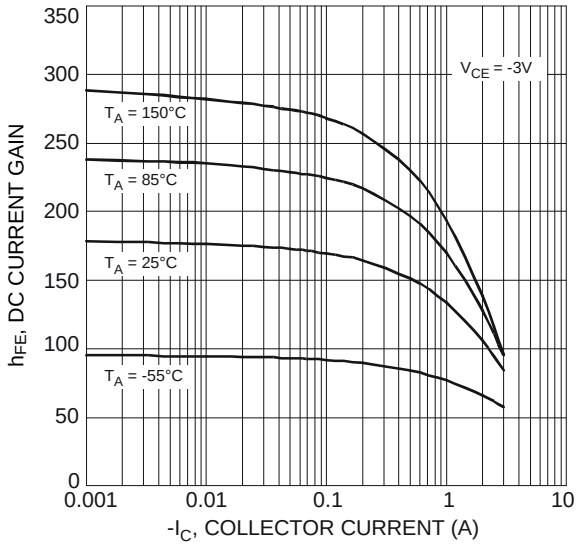


Figure 2. Typical DC Current Gain vs. Collector Current (2DB1188Q)

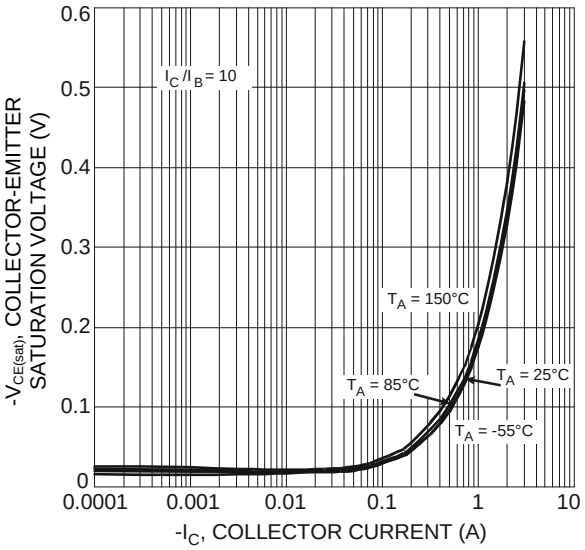


Figure 3. Typical Collector-Emitter Saturation Voltage vs. Collector Current

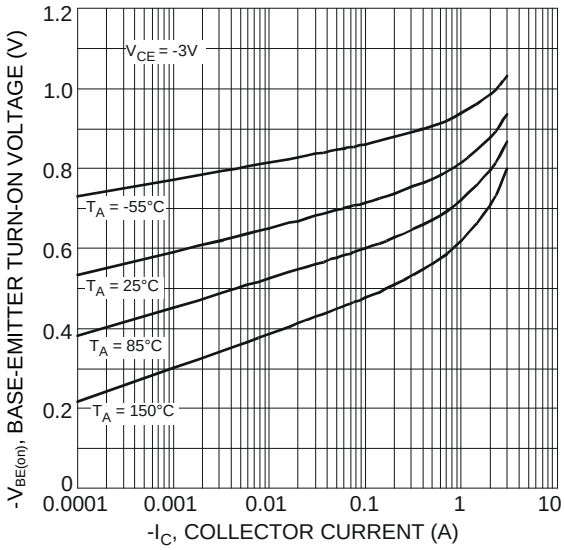


Figure 4. Typical Base-Emitter Turn-On Voltage vs. Collector Current

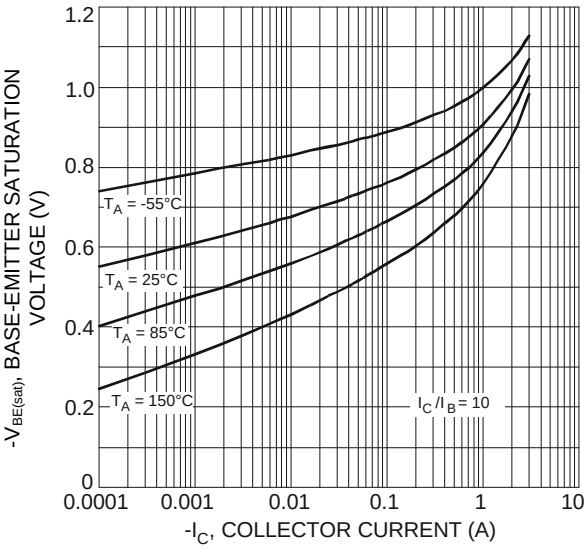


Figure 5. Typical Base-Emitter Saturation Voltage vs. Collector Current

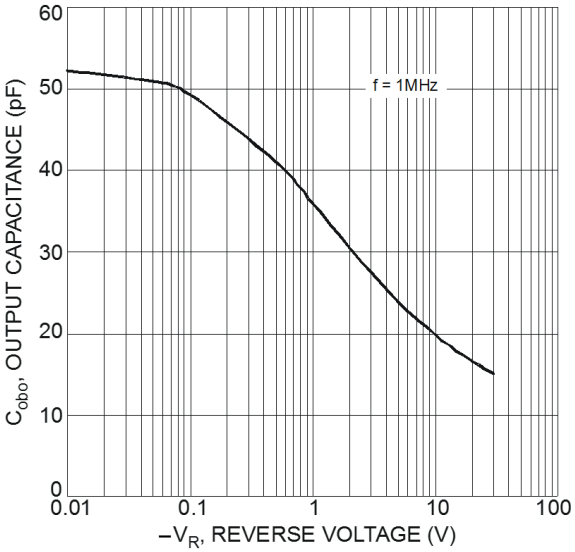


Figure 6. Typical Output Capacitance Characteristics

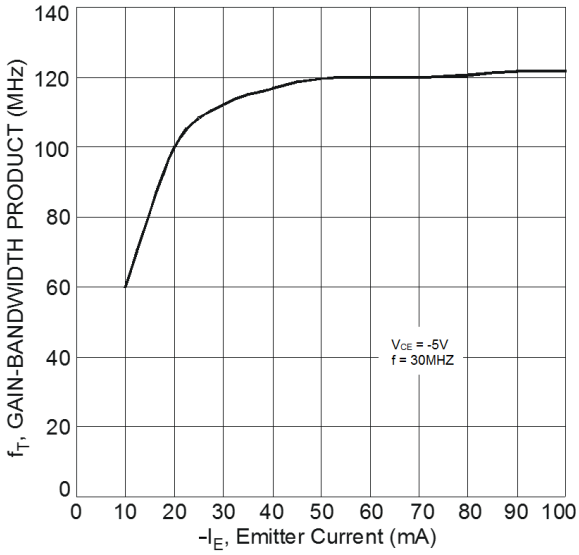
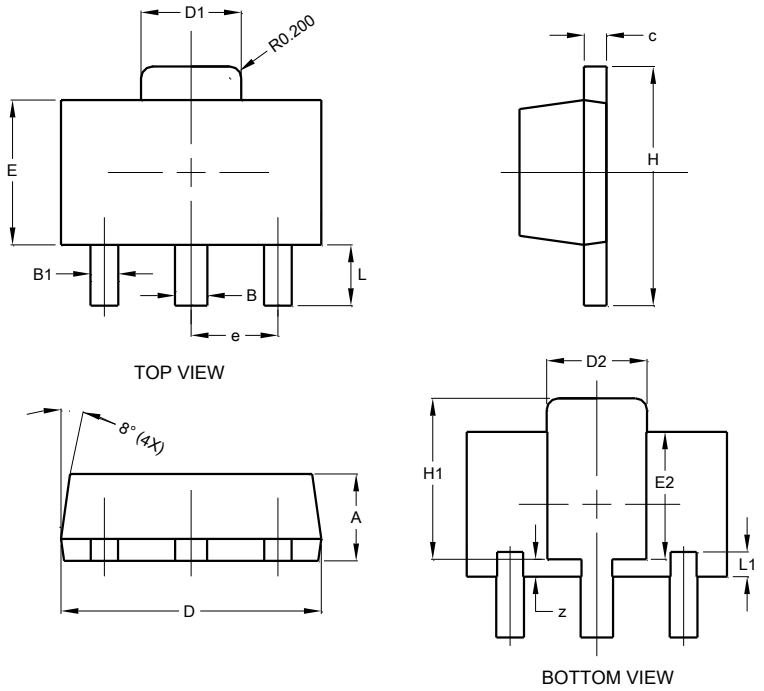


Figure 7. Typical Gain-Bandwidth Product vs. Emitter Current

Package Outline Dimensions

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

SOT89

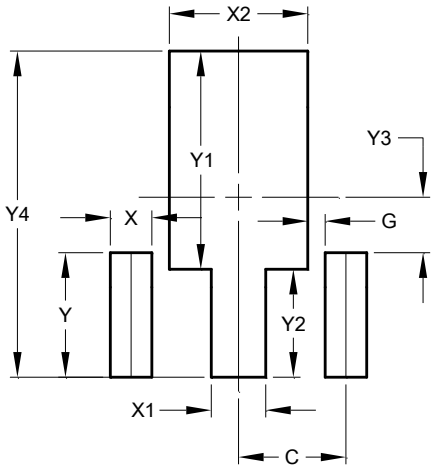


SOT89			
Dim	**Min**	**Max**	**Typ**
A	1.40	1.60	1.50
B	0.50	0.62	0.56
B1	0.42	0.54	0.48
c	0.35	0.43	0.38
D	4.40	4.60	4.50
D1	1.62	1.83	1.733
D2	1.61	1.81	1.71
E	2.40	2.60	2.50
E2	2.05	2.35	2.20
e	-	-	1.50
H	3.95	4.25	4.10
H1	2.63	2.93	2.78
L	0.90	1.20	1.05
L1	0.327	0.527	0.427
z	0.20	0.40	0.30
All Dimensions in mm			

Suggested Pad Layout

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

SOT89



Dimensions	Value (in mm)
C	1.500
G	0.244
X	0.580
X1	0.760
X2	1.933
Y	1.730
Y1	3.030
Y2	1.500
Y3	0.770
Y4	4.530

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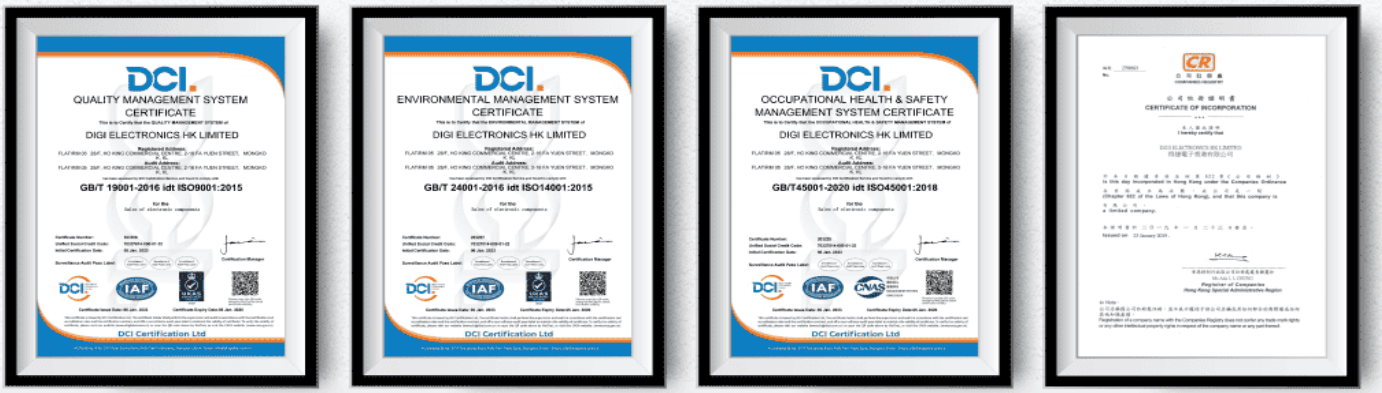

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