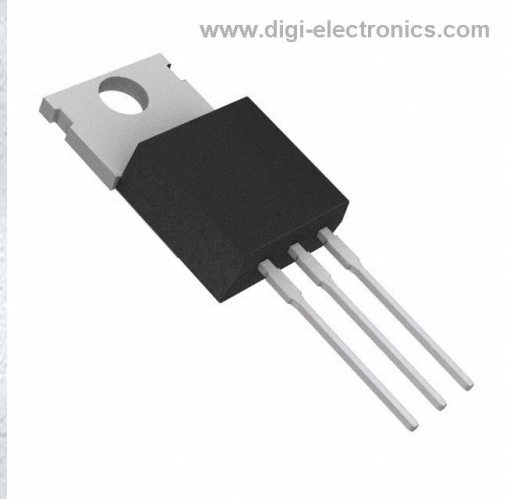
2N6490G Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number	2N6490G-DG
Manufacturer	onsemi
Manufacturer Product Number	2N6490G
Description	TRANS PNP 60V 15A TO220
Detailed Description	Bipolar (BJT) Transistor PNP 60 V 15 A 5MHz 1.8 W T hrough Hole TO-220

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
2N6490G	onsemi
Series:	Product Status:
-	Obsolete
Transistor Type:	Current - Collector (Ic) (Max):
PNP	15 A
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ Ib, Ic:
60 V	3.5V @ 5A, 15A
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ Ic, Vce:
1mA	20 @ 5A, 4V
Power - Max:	Frequency - Transition:
1.8 W	5MHz
Operating Temperature:	Mounting Type:
-65°C ~ 150°C (TJ)	Through Hole
Package / Case:	Supplier Device Package:
TO-220-3	TO-220
Base Product Number:	
2N6490	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.29.0095	

onsemi

DATA SHEET
www.onsemi.com

Complementary Silicon Plastic Power Transistors

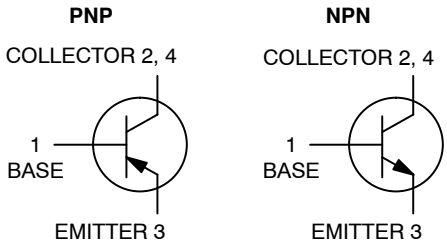
2N6487, 2N6488 (NPN), 2N6490, 2N6491 (PNP)

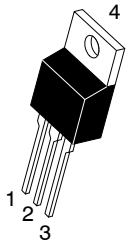
These devices are designed for use in general−purpose amplifier and switching applications.

Features

- High DC Current Gain
- High Current Gain − Bandwidth Product
- TO−220 Compact Package
- These Devices are Pb−Free and are RoHS Compliant*

15 AMPERE COMPLEMENTARY SILICON POWER TRANSISTORS 60−80 VOLTS, 75 WATTS





TO−220
CASE 221A
STYLE 1

MAXIMUM RATINGS (Note 1)

Rating	Symbol	Value	Unit
Collector−Emitter Voltage 2N6487, 2N6490 2N6488, 2N6491	V_{CEO}	 60 80	Vdc
Collector−Base Voltage 2N6487, 2N6490 2N6488, 2N6491	V_{CB}	 70 90	Vdc
Emitter−Base Voltage	V_{EB}	5.0	Vdc
Collector Current − Continuous	I_C	15	Adc
Base Current	I_B	5.0	Adc
Total Power Dissipation @ T_C = 25°C Derate above 25°C	P_D	 75 0.6	 W W/°C
Total Power Dissipation @ T_A = 25°C Derate above 25°C	P_D	 1.8 0.014	 W W/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−65 to +150	°C

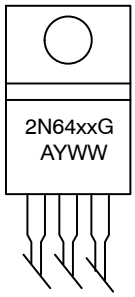
Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.
1. Indicates JEDEC Registered Data.

THERMAL CHARACTERISTICS

Characteristics	Symbol	Max	Unit
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	1.67	°C/W
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	70	°C/W

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

MARKING DIAGRAM



2N64xx = Specific Device Code
xx = See Table on Page 5
G = Pb−Free Package
A = Assembly Location
Y = Year
WW = Work Week

ORDERING INFORMATION

See detailed ordering, marking, and shipping information on page 5 of this data sheet.

2N6487, 2N6488 (NPN), 2N6490, 2N6491 (PNP)

ELECTRICAL CHARACTERISTICS (T_C = 25°C unless otherwise noted) (Note 2)

Characteristic	Symbol	Min	Max	Unit
OFF CHARACTERISTICS				
Collector−Emitter Sustaining Voltage (Note 3) (I_C = 200 mAdc, I_B = 0) 2N6487, 2N6490 2N6488, 2N6491	$V_{CEO(sus)}$	 60 80	 – –	Vdc
Collector−Emitter Sustaining Voltage (Note 3) (I_C = 200 mAdc, V_{BE} = 1.5 Vdc) 2N6487, 2N6490 2N6488, 2N6491	V_{CEX}	 70 90	 – –	Vdc
Collector Cutoff Current (V_{CE} = 30 Vdc, I_B = 0) 2N6487, 2N6490 (V_{CE} = 40 Vdc, I_B = 0) 2N6488, 2N6491	I_{CEO}	 – –	 1.0 1.0	mAdc
Collector Cutoff Current (V_{CE} = 65 Vdc, $V_{EB(off)}$ = 1.5 Vdc) 2N6487, 2N6490 (V_{CE} = 85 Vdc, $V_{EB(off)}$ = 1.5 Vdc) 2N6488, 2N6491 (V_{CE} = 60 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 150°C) 2N6487, 2N6490 (V_{CE} = 80 Vdc, $V_{EB(off)}$ = 1.5 Vdc, T_C = 150°C) 2N6488, 2N6491	I_{CEX}	 – – – –	 500 500 5.0 5.0	μAdc
Emitter Cutoff Current (V_{BE} = 5.0 Vdc, I_C = 0)	I_{EBO}	 –	 1.0	mAdc
ON CHARACTERISTICS				
DC Current Gain (I_C = 5.0 Adc, V_{CE} = 4.0 Vdc) (I_C = 15 Adc, V_{CE} = 4.0 Vdc)	h_{FE}	 20 5.0	 150 –	–
Collector−Emitter Saturation Voltage (I_C = 5.0 Adc, I_B = 0.5 Adc) (I_C = 15 Adc, I_B = 5.0 Adc)	$V_{CE(sat)}$	 – –	 1.3 3.5	Vdc
Base−Emitter On Voltage (I_C = 5.0 Adc, V_{CE} = 4.0 Vdc) (I_C = 15 Adc, V_{CE} = 4.0 Vdc)	$V_{BE(on)}$	 – –	 1.3 3.5	Vdc
DYNAMIC CHARACTERISTICS				
Current−Gain − Bandwidth Product (Note 4) (I_C = 1.0 Adc, V_{CE} = 4.0 Vdc, f_{test} = 1.0 MHz)	f_T	 5.0	 –	MHz
Small−Signal Current Gain (I_C = 1.0 Adc, V_{CE} = 4.0 Vdc, f = 1.0 kHz)	h_{fe}	 25	 –	–

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.

2. Indicates JEDEC Registered Data.
3. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.
4. $f_T = |h_{fe}| \bullet f_{test}$

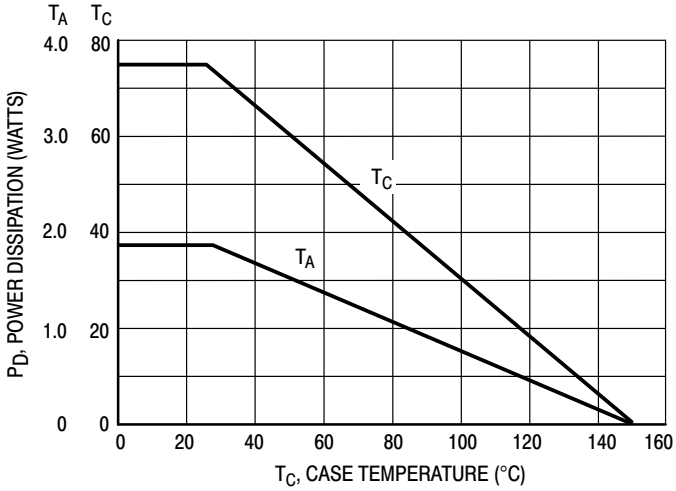
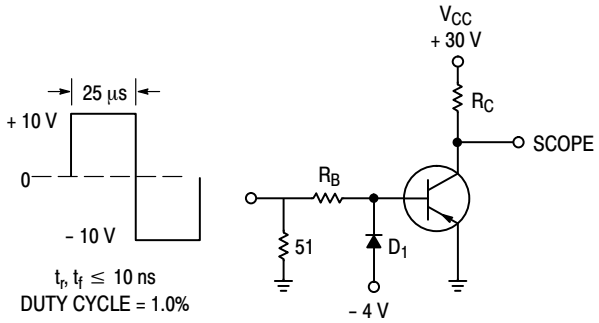


Figure 1. Power Derating



R_B AND R_C VARIED TO OBTAIN DESIRED CURRENT LEVELS.
FOR PNP, REVERSE ALL POLARITIES.

D_1 MUST BE FAST RECOVERY TYPE, e.g.:
1N5825 USED ABOVE $I_B \approx 100$ mA
MSD6100 USED BELOW $I_B \approx 100$ mA

Figure 2. Switching Time Test Circuit

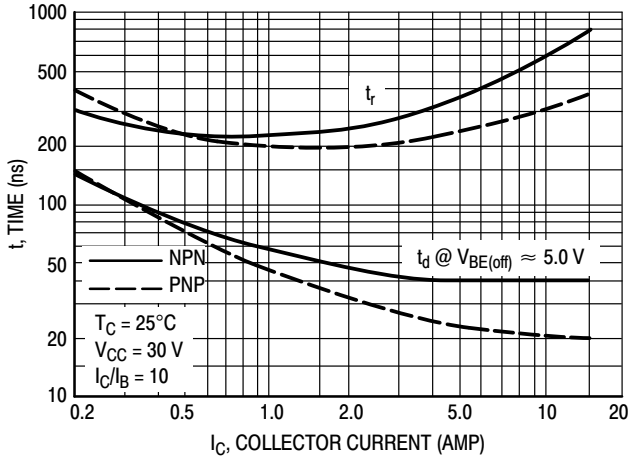


Figure 3. Turn−On Time

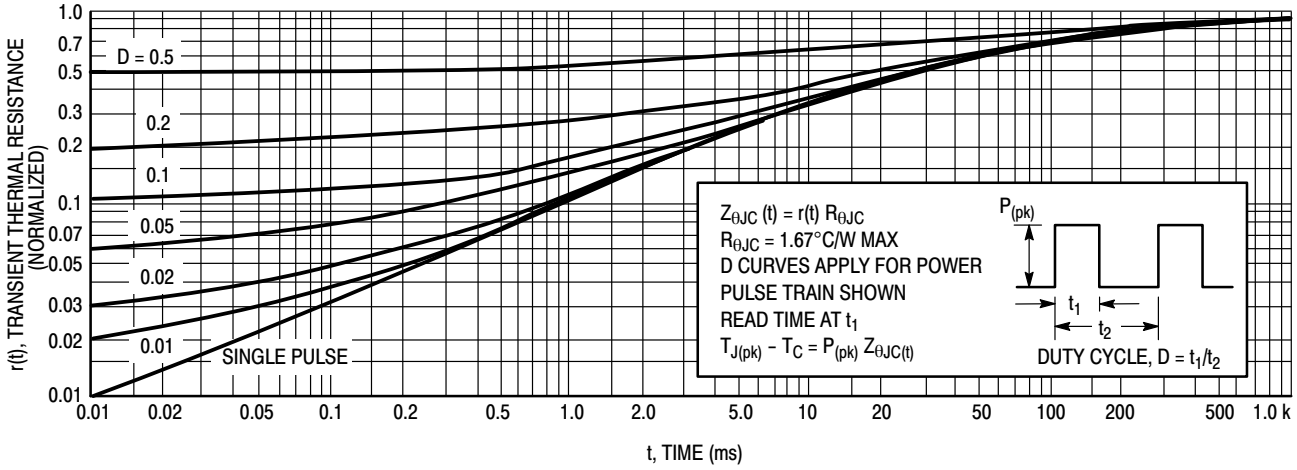


Figure 4. Thermal Response

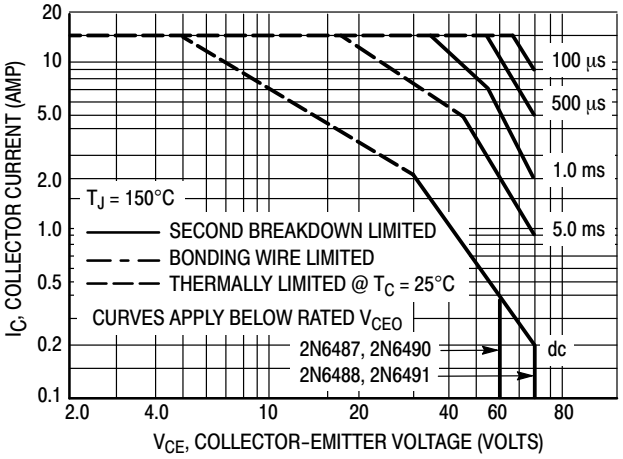


Figure 5. Active−Region Safe Operating Area

There are two limitations on the power handling ability of a transistors 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 5 is based on $T_{J(pk)}$ = 150°C; T_C is variable depending on conditions. Second breakdown pulse limits are valid for duty cycles to 10% provided $T_{J(pk)} \le 150°C$. $T_{J(pk)}$ may be calculated from the data in Figure 4. At high case temperatures, thermal limitations will reduce the power that can be handled to values less than the limitations imposed by second breakdown.

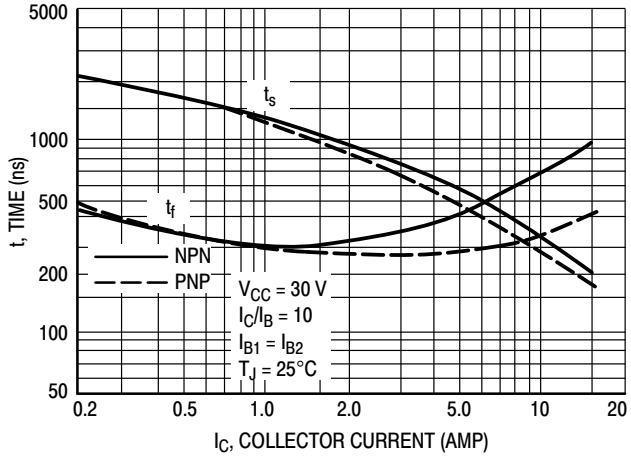


Figure 6. Turn−Off Time

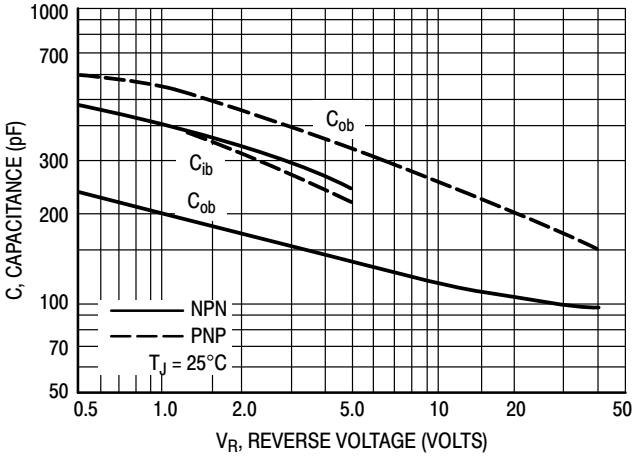


Figure 7. Capacitances

NPN
2N6487, 2N6488

PNP
2N6490, 2N6491

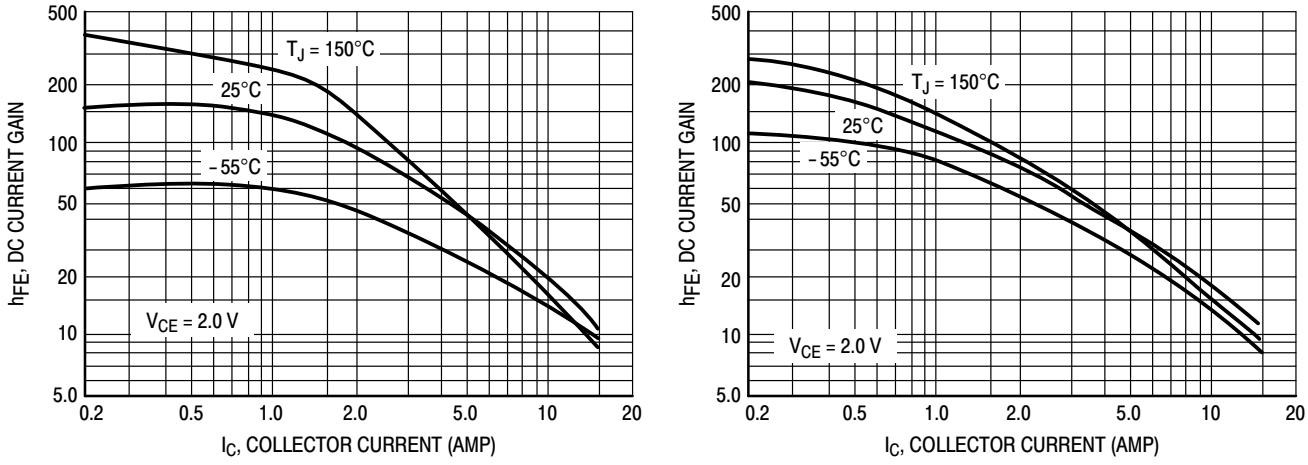


Figure 8. DC Current Gain

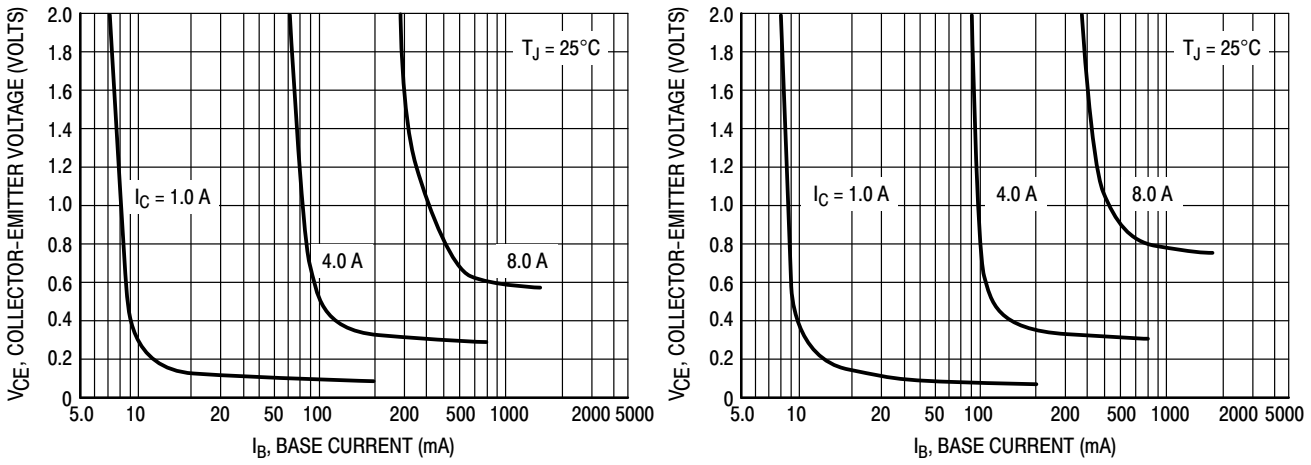


Figure 9. Collector Saturation Region

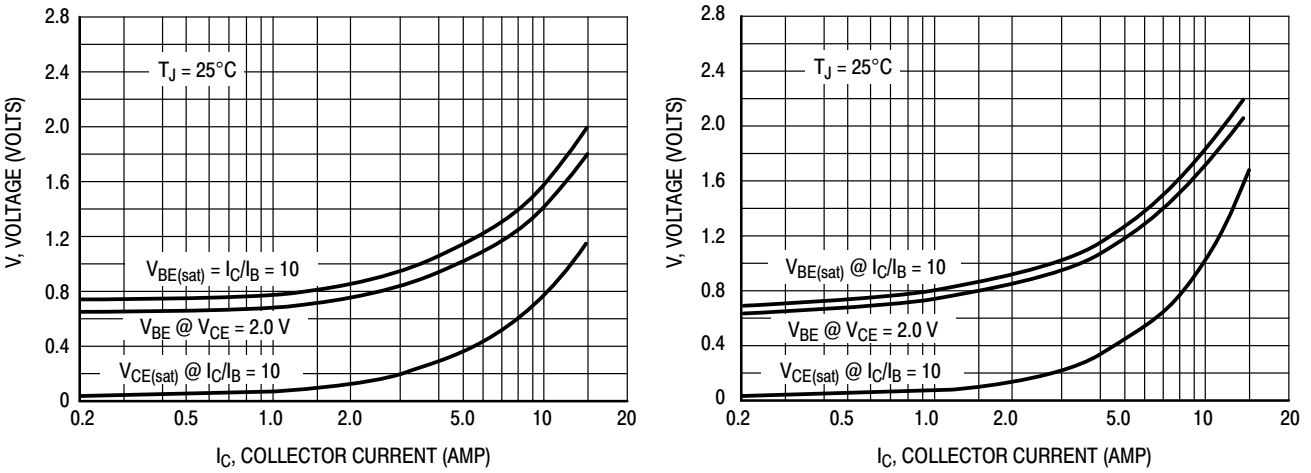


Figure 10. “On” Voltages

ORDERING INFORMATION

Device	Device Marking	Package	Shipping
2N6487G	2N6487	TO−220 (Pb−Free)	50 Units / Rail
2N6488G	2N6488	TO−220 (Pb−Free)	50 Units / Rail
2N6490G	2N6490	TO−220 (Pb−Free)	50 Units / Rail
2N6491G	2N6491	TO−220 (Pb−Free)	50 Units / Rail

ADDITIONAL INFORMATION

TECHNICAL PUBLICATIONS:
Technical Library: www.onsemi.com/design/resources/technical−documentation
onsemi Website: www.onsemi.com

ONLINE SUPPORT: www.onsemi.com/support
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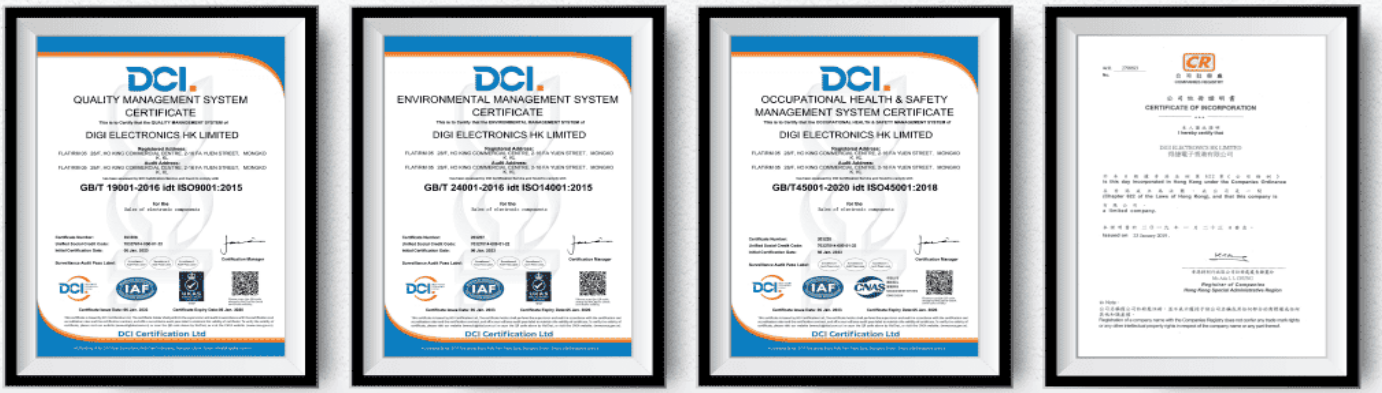

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