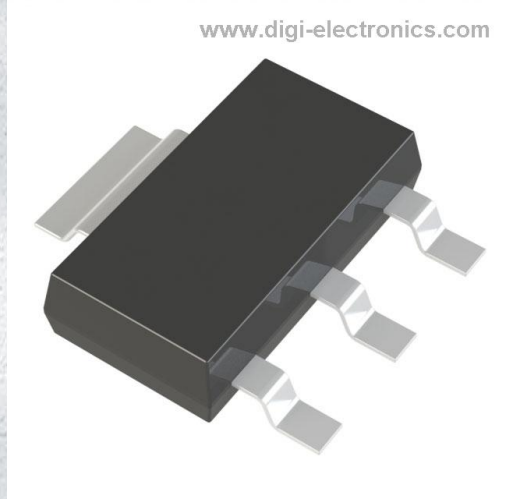
DZT2907A-13 Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number	DZT2907A-13-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	DZT2907A-13
Description	TRANS PNP 60V 0.6A SOT223-3
Detailed Description	Bipolar (BJT) Transistor PNP 60 V 600 mA 200MHz 1 W Surface Mount SOT-223-3

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
DZT2907A-13	Diodes Incorporated
Series:	Product Status:
-	Active
Transistor Type:	Current - Collector (Ic) (Max):
PNP	600 mA
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ Ib, Ic:
60 V	1.6V @ 50mA, 500mA
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ Ic, Vce:
10nA (ICBO)	100 @ 150mA, 10V
Power - Max:	Frequency - Transition:
1 W	200MHz
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:	
DZT2907	

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

DZT2907A

60V PNP SMALL SIGNAL TRANSISTOR IN SOT223

Features

- BV_{CEO} > -60V
- Epitaxial Planar Die Construction
- Ideally Suited for Automated Assembly Processes
- Complementary NPN Type: DIODES™ DZT2222A
- **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-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

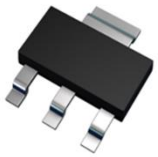
Mechanical Data

- Package: SOT223
- Package Material: Molded Plastic. "Green" Molding Compound. UL Flammability 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: 0.112 grams (Approximate)

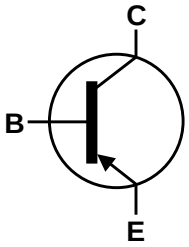
Applications

- Medium power amplification and switching

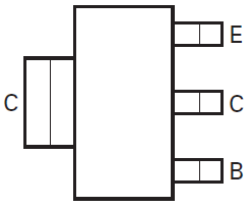
SOT223



Top View



Device Symbol



Top View
Pin-Out

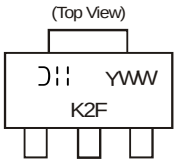
Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
DZT2907A-13	SOT223	K2F	13	12	2,500	Reel

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

SOT223



K2F = Product Type Marking Code
YWW = Date Code Marking
Y or $\overline{Y}$ = Last Digit of Year (ex: 3 = 2023)
WW = Week Code (01 to 52)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-60	V
Collector-Emitter Voltage	V_{CEO}	-60	V
Emitter-Base Voltage	V_{EBO}	-5	V
Collector Continuous Current	I_C	-600	mA
Peak Collector Current	I_{CM}	-800	mA

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

Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	0.83	W
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	150	°C/W
Power Derating Factor above +25°C (Note 5)	P_{DER}	6.66	mW/°C
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

Note: 5. For a device mounted on minimum recommended pad (MRP) layout that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.

Thermal Characteristics and Derating Information

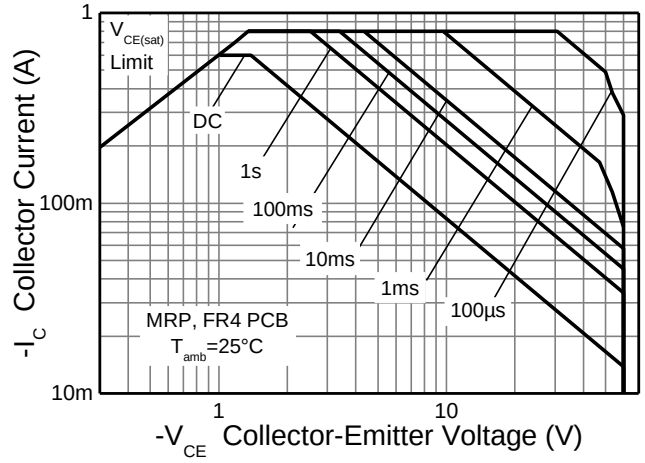


Figure 1. Safe Operating Area

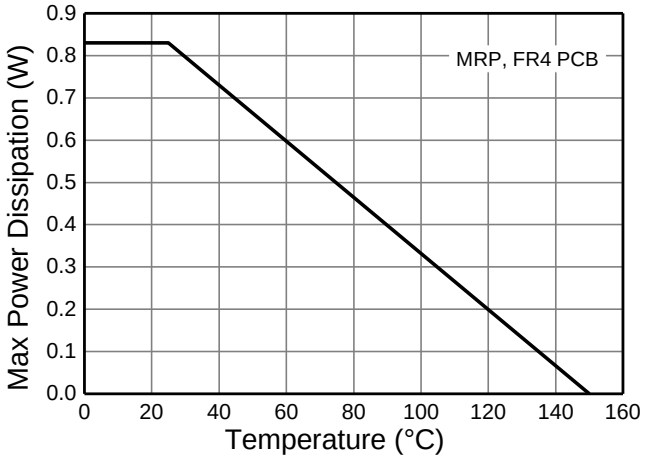


Figure 2. Derating Curve

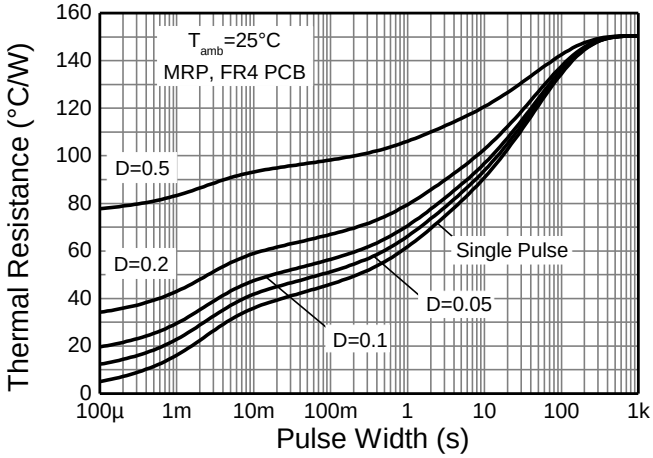


Figure 3. Transient Thermal Impedance

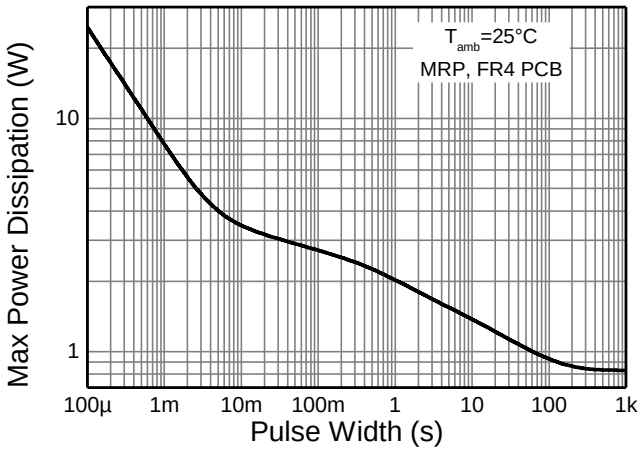


Figure 4. Pulse Power Dissipation

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
OFF CHARACTERISTICS (Note 6)						
Collector-Base Breakdown Voltage	BV_{CBO}	-60	—	—	V	I_C = -10µA
Collector-Emitter Breakdown Voltage	BV_{CEO}	-60	—	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-5	—	—	V	I_E = -10µA
Collector-Base Cutoff Current	I_{CBO}	—	—	-0.01	µA	V_{CB} = -50V
		—	—	-10		V_{CB} = -50V, T_A = +150°C
Collector Cutoff Current	I_{CEX}	—	—	-50	nA	V_{CE} = -30V, $V_{EB(off)}$ = -0.5V
Base Cutoff Current	I_{BL}	—	—	-50	nA	V_{CE} = -30V, $V_{EB(off)}$ = -0.5V
ON CHARACTERISTICS (Note 6)						
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	-0.4	V	I_C = -150mA, I_B = -15mA
		—	—	-1.6	V	I_C = -500mA, I_B = -50mA
DC Current Gain	h_{FE}	75	—	—	—	V_{CE} = -10V, I_C = -100µA
		100	—	—	—	V_{CE} = -10V, I_C = -1mA
		100	—	—	—	V_{CE} = -10V, I_C = -10mA
		100	—	300	—	V_{CE} = -10V, I_C = -150mA
		50	—	—	—	V_{CE} = -10V, I_C = -500mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	-1.3	V	I_C = -150mA, I_B = -15mA
		—	—	-2.6	V	I_C = -500mA, I_B = -50mA
SMALL SIGNAL CHARACTERISTICS						
Current Gain-Bandwidth Product	f_T	200	—	—	MHz	V_{CE} = -20V, I_C = -50mA, f = 100MHz
Output Capacitance	C_{obo}	—	—	8	pF	V_{CB} = -10V, f = 1MHz
Input Capacitance	C_{ibo}	—	—	30	pF	V_{EB} = -2V, f = 1MHz
SWITCHING CHARACTERISTICS						
Turn-On Time	t_{on}	—	—	45	ns	V_{CC} = -30V, I_C = -150mA, I_{B1} = -15mA
Delay Time	t_d	—	—	10	ns	
Rise Time	t_r	—	—	40	ns	
Turn-Off Time	t_{off}	—	—	100	ns	V_{CC} = -6V, I_C = -150mA, I_{B1} = $-I_{B2}$ = -15mA
Storage Time	t_s	—	—	80	ns	
Fall Time	t_f	—	—	30	ns	

Note: 6. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

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

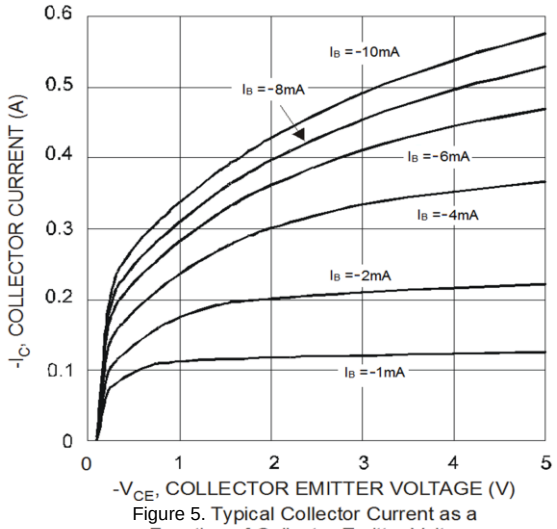


Figure 5. Typical Collector Current as a Function of Collector Emitter Voltage

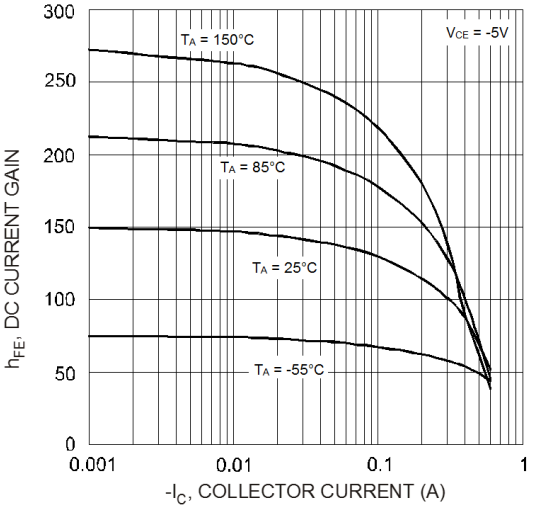


Figure 6. Typical DC Current Gain vs. Collector Current

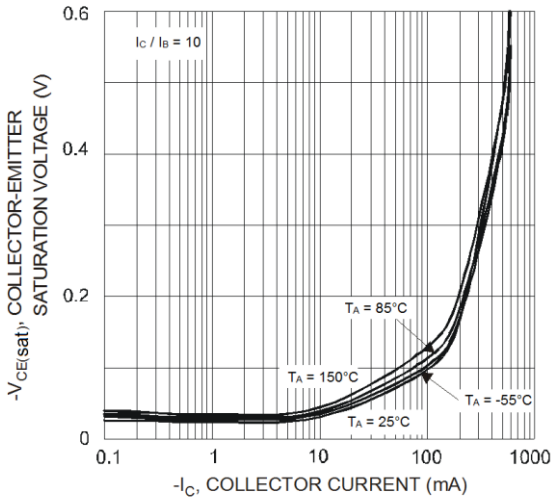


Figure 7. Typical Collector-Emitter Saturation Voltage vs. Collector Current

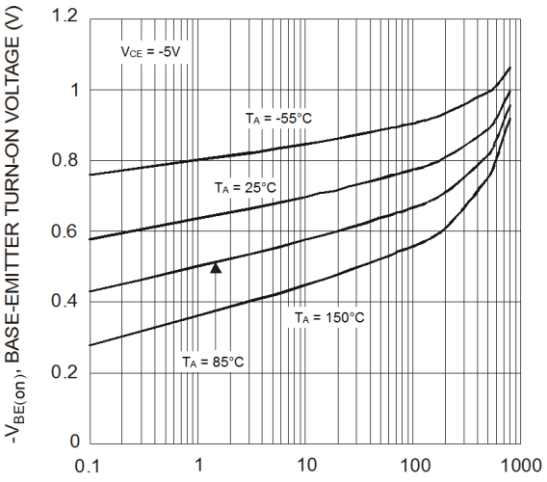


Figure 8. Typical Base-Emitter Turn-On Voltage vs. Collector Current

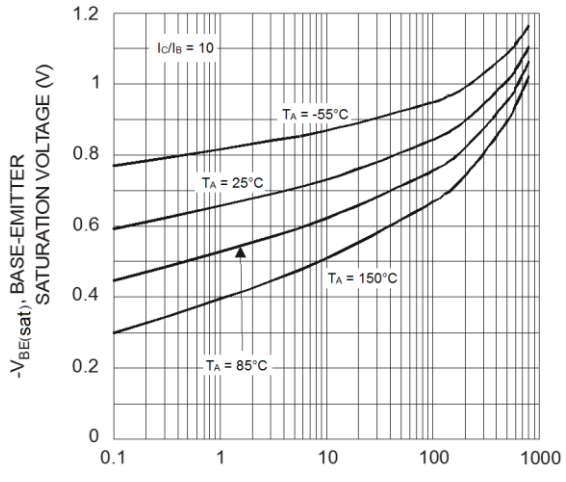


Figure 9. Typical Base-Emitter Saturation Voltage vs. Collector Current

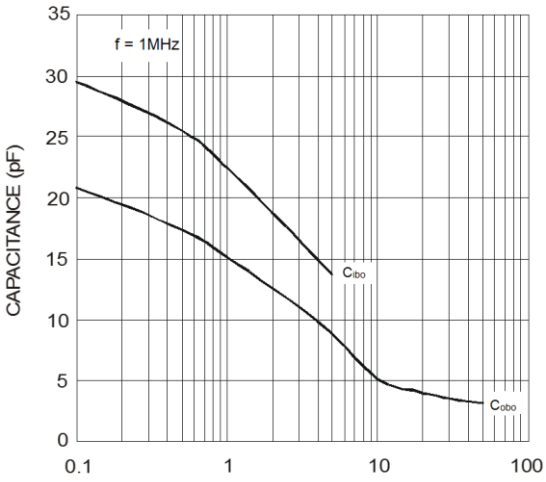


Figure 10. Typical Capacitance Characteristics

Typical Electrical Characteristics (continued)

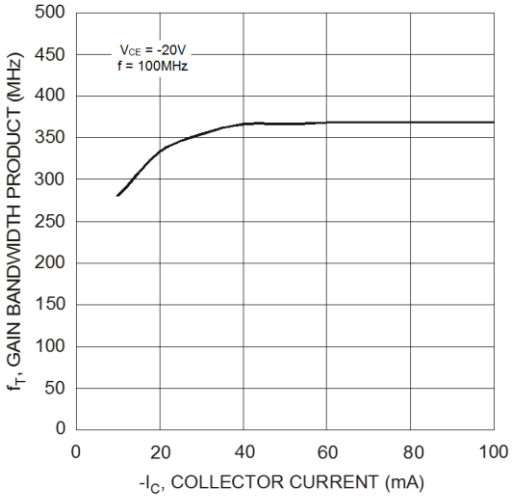


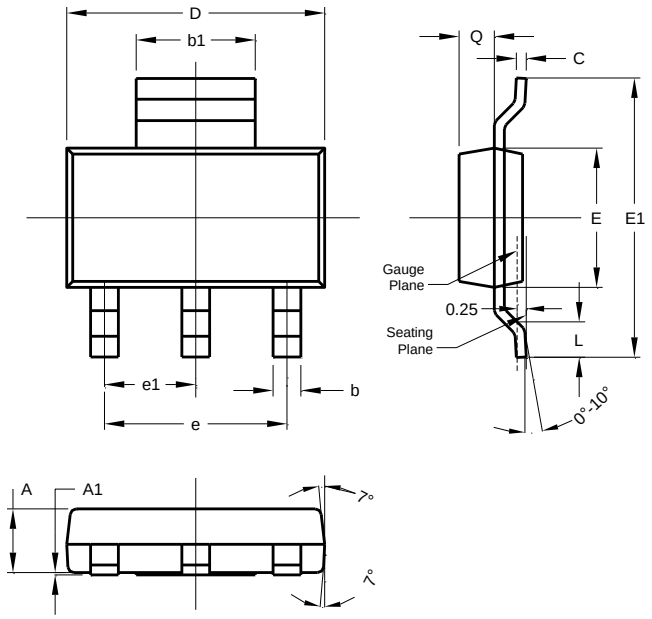
Figure 11. Typical Gain-Bandwidth Product vs. Collector Current

DZT2907A

Package Outline Dimensions

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

SOT223

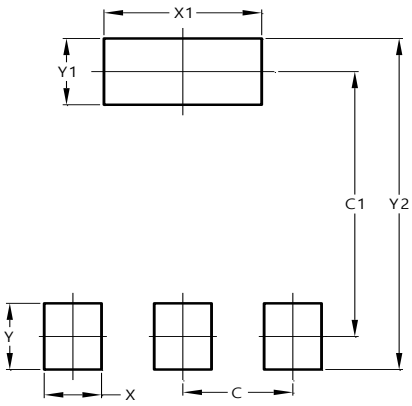


SOT223			
Dim	**Min**	**Max**	**Typ**
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
All Dimensions in mm			

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

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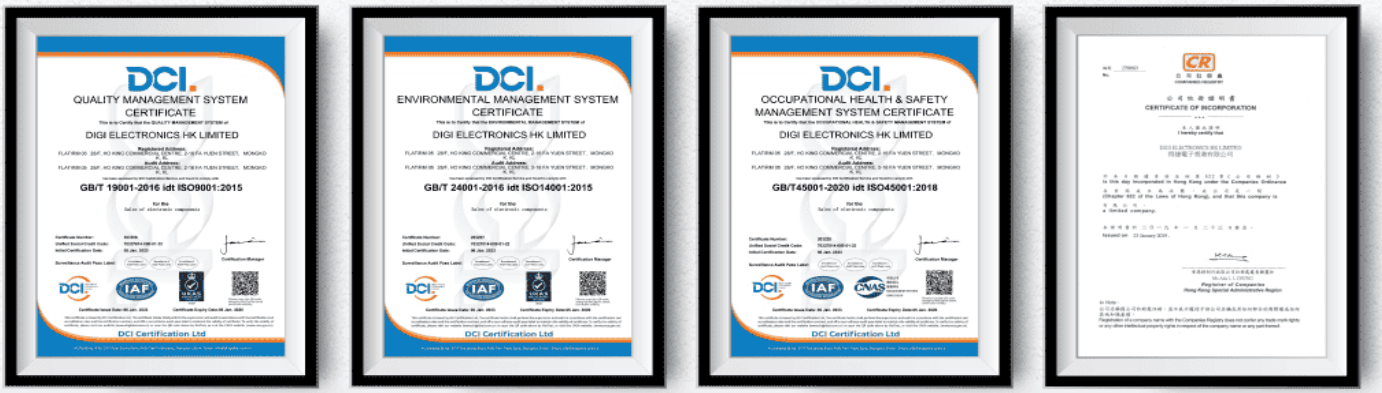

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