DSS4240T-7 Datasheet

https://www.DiGi-Electronics.com

DiGi Electronics Part Number	DSS4240T-7-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	DSS4240T-7
Description	TRANS NPN 40V 2A SOT23-3
Detailed Description	Bipolar (BJT) Transistor NPN 40 V 2 A 100MHz 600 m W Surface Mount SOT-23-3

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
DSS4240T-7	Diodes Incorporated
Series:	Product Status:
-	Not For New Designs
Transistor Type:	Current - Collector (Ic) (Max):
NPN	2 A
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ Ib, Ic:
40 V	320mV @ 200mA, 2A
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ Ic, Vce:
100nA (ICBO)	300 @ 1A, 2V
Power - Max:	Frequency - Transition:
600 mW	100MHz
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Surface Mount
Package / Case:	Supplier Device Package:
TO-236-3, SC-59, SOT-23-3	SOT-23-3
Base Product Number:	
DSS4240	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.21.0075	

THE DSS4240T IS NOT RECOMMENDED FOR NEW DESIGNS. PLEASE USE THE ZXTN4240F.

DSS4240T

Lead-free Green

40V NPN LOW SATURATION TRANSISTOR IN SOT23

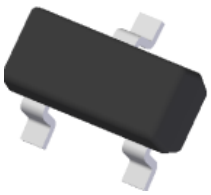
Features

- BV_{CEO} > 40V
- I_C = 2A High Continuous Collector Current
- I_{CM} = 3A Peak Pulse Current
- Low Saturation Voltage 180mV Max @ I_C = 1A
- $R_{CE(SAT)}$ = 60mΩ at 0.5A for a Low Equivalent On-Resistance
- 730mW Power Dissipation
- Complimentary PNP Type: DSS5240T
- **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 refer to the related automotive grade (Q-suffix) part. A listing can be found at https://www.diodes.com/products/automotive/**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. https://www.diodes.com/quality/product-definitions/**

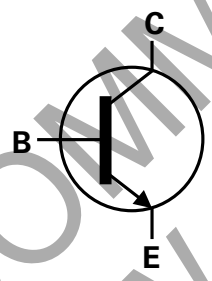
Mechanical Data

- Package: SOT23
- 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: 0.008 grams (Approximate)

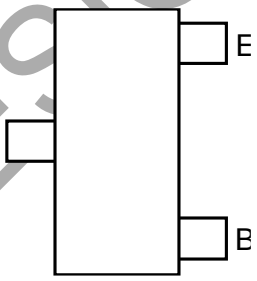
SOT23



Top View



Device Symbol



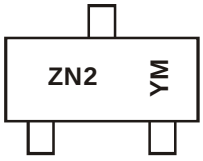
Top View
Pin Configuration

Ordering Information (Note 4)

Orderable Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carier
DSS4240T-7	SOT23	ZN2	7	8	3000	Reel
DSS4240T-13	SOT23	ZN2	13	8	10,000	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



ZN2 = Product Type Marking Code
YM = Date Code Marking
Y = Year (ex: M = 2025)
M = Month (ex: 9 = September)

Date Code Key

Year	2008	-	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034
Code	V	-	M	N	P	R	S	T	U	V	W	X

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

Absolute 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}	40	V
Emitter-Base Voltage	V_{EBO}	5	V
Peak Pulse Collector Current	I_{CM}	3	A
Continuous Collector Current	I_C	2	A
Peak Base Current	I_{BM}	0.3	A

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

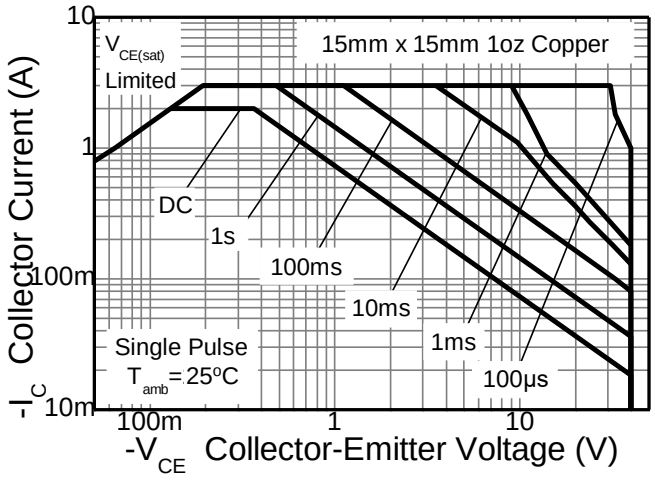
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P_D	730	mW
Power Dissipation (Note 6)	P_D	600	mW
Thermal Resistance, Junction to Ambient Air (Note 5)	$R_{\theta JA}$	171	°C/W
Thermal Resistance, Junction to Ambient Air (Note 6)	$R_{\theta JA}$	209	°C/W
Thermal Resistance, Junction to Lead (Note 7)	$R_{\theta JL}$	75	°C/W
Thermal Resistance, Junction to Case (Note 8)	$R_{\theta JC}$	51	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 9)

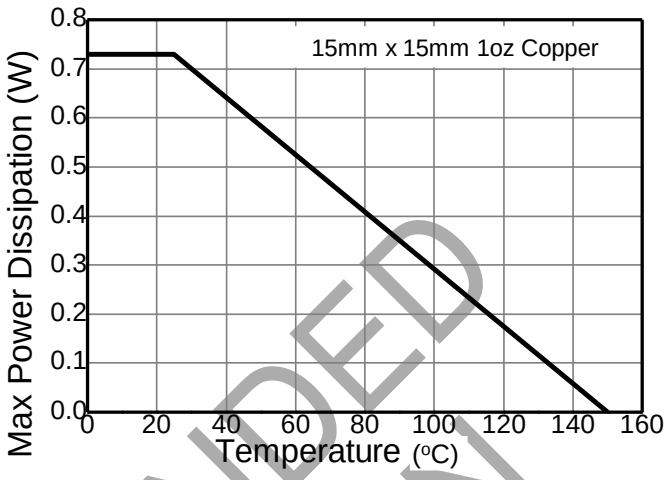
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge — Human Body Model	ESD HBM	4000	V	3A
Electrostatic Discharge — Machine Model	ESD MM	400	V	C
Electrostatic Discharge — Charged Device Model	ESD CDM	1,000	V	IV

Notes:
5. For a device mounted with the collector lead on 15mm × 15mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
6. Same as Note 5, except the device is mounted on minimum recommended pad layout.
7. Thermal resistance from junction to solder-point (at the end of the collector lead).
8. Thermal resistance from junction to the top of the case.
9. Refer to JEDEC specification JESD22-A114, JESD22-A115 and JESD22-C101.

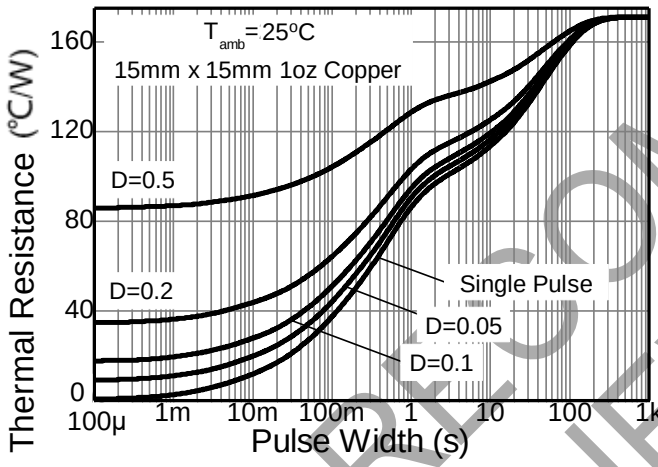
Thermal Characteristics and Derating Information



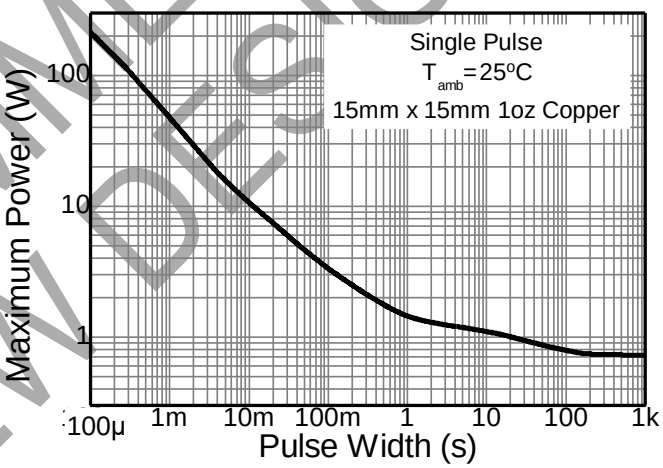
Safe Operating Area



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
OFF CHARACTERISTICS						
Collector-Base Breakdown Voltage	BV_{CBO}	40	—	—	V	I_C = 100µA
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	40	—	—	V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	5	—	—	V	I_E = 100µA
Collector-Base Cutoff Current	I_{CBO}	—	—	100	nA	V_{CB} = 30V, I_E = 0
		—	—	50	µA	V_{CB} = 30V, I_E = 0, T_A = +150°C
Emitter-Base Cutoff Current	I_{EBO}	—	—	100	nA	V_{EB} = 4V, I_C = 0
ON CHARACTERISTICS (Note 7)						
DC Current Gain	h_{FE}	350	—	—	—	V_{CE} = 2V, I_C = 0.1A
		300	—	—		V_{CE} = 2V, I_C = 0.5A
		300	—	—		V_{CE} = 2V, I_C = 1A
		150	—	—		V_{CE} = 2V, I_C = 2A
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$	—	—	70	mV	I_C = 100mA, I_B = 1mA
		—	30	100		I_C = 500mA, I_B = 50mA
		—	—	180		I_C = 750mA, I_B = 15mA
		—	—	180		I_C = 1A, I_B = 50mA
		—	—	320		I_C = 2A, I_B = 200mA
Equivalent On-Resistance	$R_{CE(sat)}$	—	60	200	mΩ	I_C = 500mA, I_B = 50mA
Base-Emitter Saturation Voltage	$V_{BE(sat)}$	—	—	1.1	V	I_C = 2A, I_B = 200mA
Base-Emitter Turn-on Voltage	$V_{BE(on)}$	—	—	0.75	V	V_{CE} = 2V, I_C = 100mA
SMALL SIGNAL CHARACTERISTICS						
Transition Frequency	f_T	100	—	—	MHz	V_{CE} = 10V, I_C = 100mA, f = 100MHz
Output Capacitance	C_{ob}	—	—	20	pF	V_{CB} = 10V, f = 1MHz

Note:
7. Thermal resistance from junction to solder-point (at the end of the collector lead).
8. Thermal resistance from junction to the top of the case.
9. Refer to JEDEC specification JESD22-A114, JESD22-A115 and JESD22-C101.
10. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

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

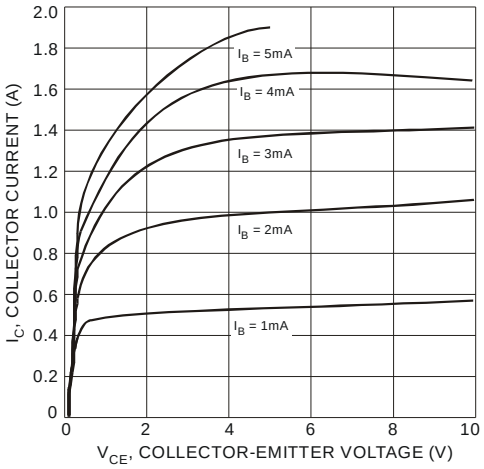


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

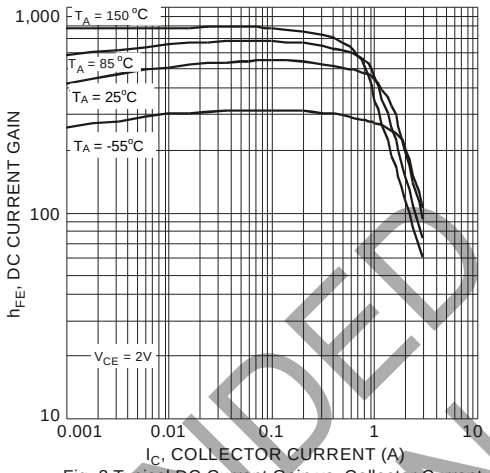


Fig. 3 Typical DC Current Gain vs. Collector Current

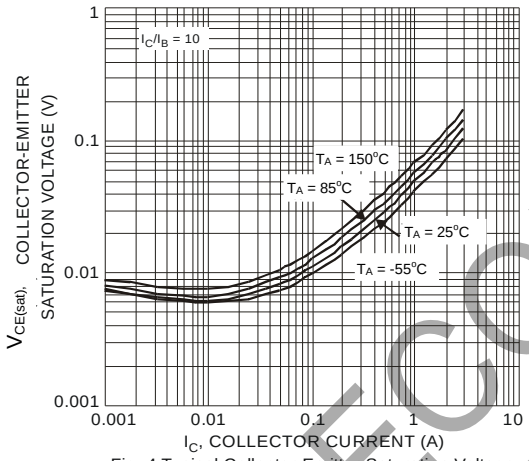


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

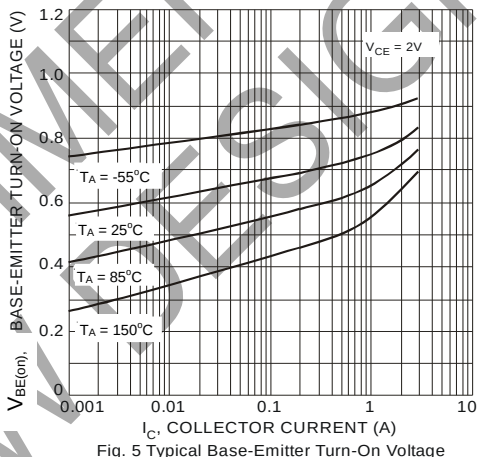


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

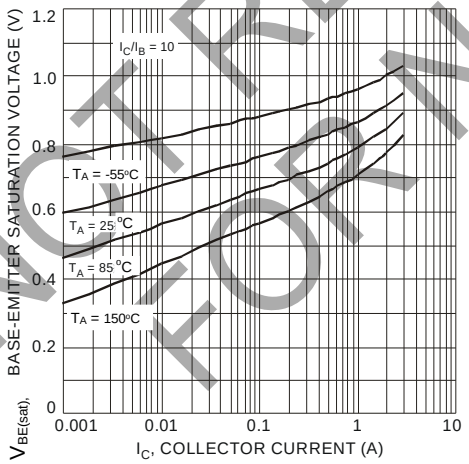


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

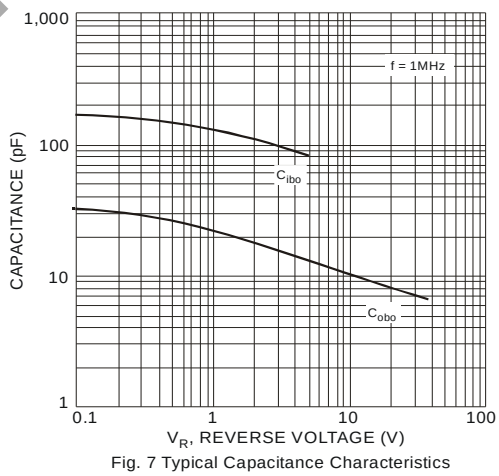


Fig. 7 Typical Capacitance Characteristics

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

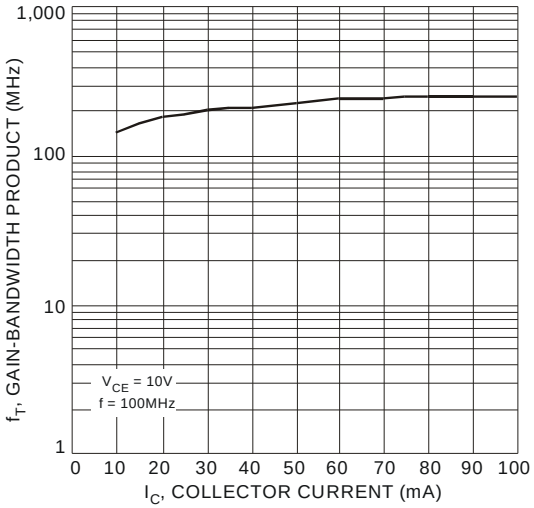
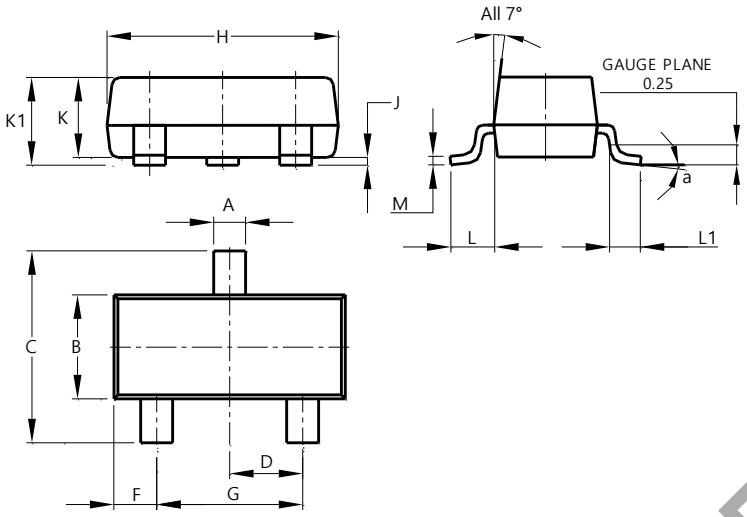


Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

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

SOT23

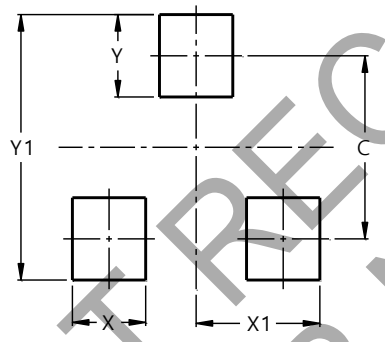


SOT23			
Dim	**Min**	**Max**	**Typ**
A	0.37	0.51	0.40
B	1.20	1.40	1.30
C	2.30	2.50	2.40
D	0.89	1.03	0.915
F	0.45	0.60	0.535
G	1.78	2.05	1.83
H	2.80	3.00	2.90
J	0.013	0.10	0.05
K	0.890	1.00	0.975
K1	0.903	1.10	1.025
L	0.45	0.61	0.55
L1	0.25	0.55	0.40
M	0.085	0.150	0.110
a	0°	8°	–
All Dimensions in mm			

Suggested Pad Layout

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

SOT23



Dimensions	Value (in mm)
C	2.0
X	0.8
X1	1.35
Y	0.9
Y1	2.9

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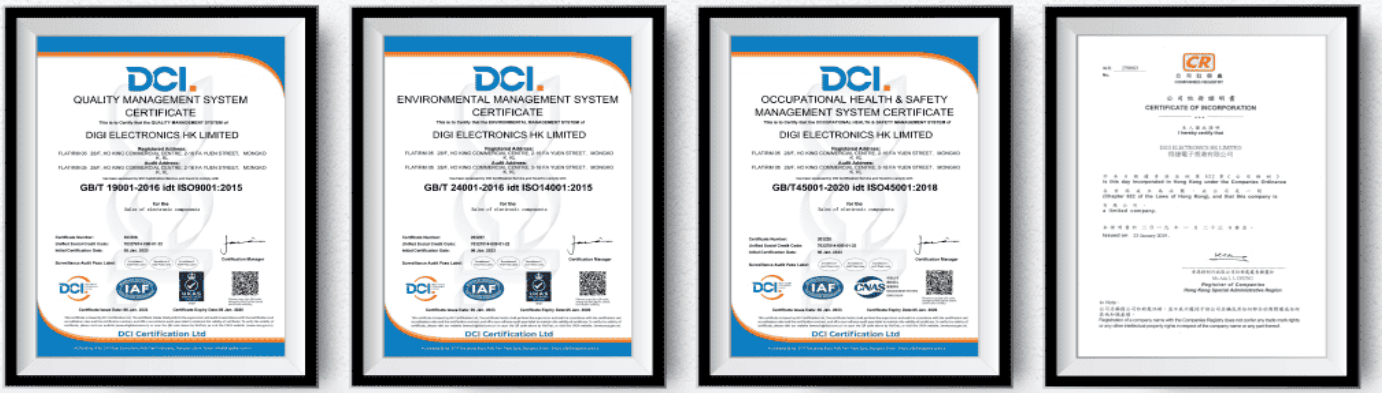

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