RN1108,LXHF(CT Datasheet

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DiGi Electronics Part Number	RN1108,LXHF(CT-DG
Manufacturer	Toshiba Semiconductor and Storage
Manufacturer Product Number	RN1108,LXHF(CT
Description	TRANS PREBIAS NPN 50V 0.1A SSM
Detailed Description	Pre-Biased Bipolar Transistor (BJT) NPN - Pre-Biased 50 V 100 mA 250 MHz 100 mW Surface Mount SSM

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RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
RN1108,LXHF(CT	Toshiba Semiconductor and Storage
Series:	Product Status:
-	Active
Transistor Type:	Current - Collector (Ic) (Max):
NPN - Pre-Biased	100 mA
Voltage - Collector Emitter Breakdown (Max):	Resistor - Base (R1):
50 V	22 kOhms
Resistor - Emitter Base (R2):	DC Current Gain (hFE) (Min) @ Ic, Vce:
47 kOhms	80 @ 10mA, 5V
Vce Saturation (Max) @ Ib, Ic:	Current - Collector Cutoff (Max):
300mV @ 250µA, 5mA	500nA
Frequency - Transition:	Power - Max:
250 MHz	100 mW
Grade:	Qualification:
Automotive	AEC-Q101
Mounting Type:	Package / Case:
Surface Mount	SC-75, SOT-416
Supplier Device Package:	Base Product Number:
SSM	RN1108

Environmental & Export classification

Moisture Sensitivity Level (MSL):	ECCN:
1 (Unlimited)	EAR99
HTSUS:	
8541.21.0095	

TOSHIBA

Bipolar Transistors Silicon NPN Epitaxial Type (PCT Process)(Bias Resistor built-in Transistor)

RN1107/08/09

1. Applications

- Switching
- Inverter Circuits
- Interfacing
- Driver Circuits

2. Features

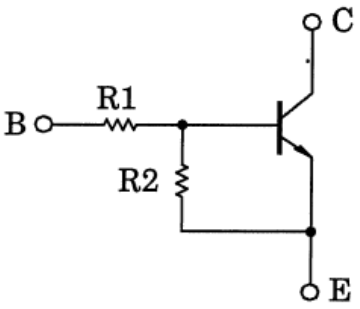
(1) AEC-Q101 qualified (Please see the orderable part number list)

(2) The integrated bias resistor reduces the number of external parts required, making it possible to reduce system size and assembly time.

(3) Toshiba offers transistors with a wide range of resistance to accommodate various circuit designs.

(4) Complementary to RN2107 to 2109

3. Equivalent Circuit

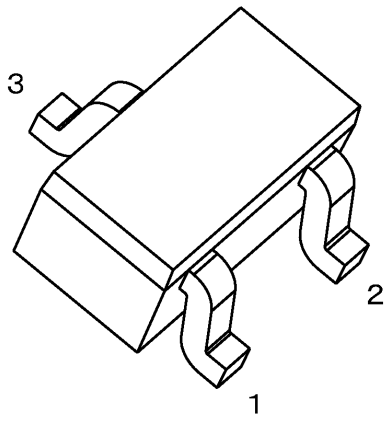


4. Bias Resistor Values

Part No.	R1 (kΩ)	R2 (kΩ)
RN1107	10	47
RN1108	22	47
RN1109	47	22

Start of commercial production
1990-12

5. Packaging and Pin Assignment



1: Base
2: Emitter
3: Collector

SSM

6. Orderable part number

Orderable part number		AEC-Q101	Note	Note	
RN1107	RN1107,LF	—		General Use	
	RN1107,LXGF	YES	(Note 1)	Unintended Use	(Note 1)
	RN1107,LXHF	YES		Automotive Use	
RN1108	RN1108,LF	—		General Use	
	RN1108,LXGF	YES	(Note 1)	Unintended Use	(Note 1)
	RN1108,LXHF	YES		Automotive Use	
RN1109	RN1109,LF	—		General Use	
	RN1109,LXGF	YES	(Note 1)	Unintended Use	(Note 1)
	RN1109,LXHF	YES		Automotive Use	

Note 1: For more information, please contact our sales or use the inquiry form on our website.

7. Absolute Maximum Ratings (Note) (Unless otherwise specified, T_a = 25 °C)

Characteristics		Symbol	Rating	Unit
Collector-base voltage	RN1107～RN1109	V_{CBO}	50	V
Collector-emitter voltage		V_{CEO}	50	
Emitter-base voltage	RN1107	V_{EBO}	6	V
	RN1108		7	
	RN1109		15	
Collector current	RN1107～RN1109	I_C	100	mA
Collector power dissipation		P_C	100	mW
Junction temperature		T_j	150	°C
Storage temperature		T_{stg}	-55 to 150	

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings.
Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc).

8. Electrical Characteristics (Unless otherwise specified, T_a = 25 °C)

Characteristics		Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	RN1107～RN1109	I_{CBO}	V_{CB} = 50 V, I_E = 0 mA	—	—	100	nA
		I_{CEO}	V_{CE} = 50 V, I_B = 0 mA	—	—	500	
Emitter cut-off current	RN1107	I_{EBO}	V_{EB} = 6 V, I_C = 0 mA	0.081	—	0.15	mA
	RN1108		V_{EB} = 7 V, I_C = 0 mA	0.078	—	0.145	
	RN1109		V_{EB} = 15 V, I_C = 0 mA	0.167	—	0.311	
DC current gain	RN1107	h_{FE}	V_{CE} = 5 V, I_C = 10 mA	80	—	—	—
	RN1108			80	—	—	
	RN1109			70	—	—	
Collector-emitter saturation voltage	RN1107～RN1109	$V_{CE(sat)}$	I_C = 5 mA, I_B = 0.25 mA	—	0.1	0.3	V
Input voltage (ON)	RN1107	$V_{I(ON)}$	V_{CE} = 0.2 V, I_C = 5 mA	0.7	—	1.8	V
	RN1108			1.0	—	2.6	
	RN1109			2.2	—	5.8	
Input voltage (OFF)	RN1107	$V_{I(OFF)}$	V_{CE} = 5 V, I_C = 0.1 mA	0.5	—	1.0	V
	RN1108			0.6	—	1.16	
	RN1109			1.5	—	2.6	
Transition frequency	RN1107～RN1109	f_T	V_{CE} = 10 V, I_C = 5 mA	—	250	—	MHz
Collector output capacitance	RN1107～RN1109	C_{ob}	V_{CB} = 10 V, I_E = 0 mA, f = 1 MHz	—	3	6	pF
Input resistance	RN1107	R_1	-	7	10	13	kΩ
	RN1108			15.4	22	28.6	
	RN1109			32.9	47	61.1	
Resistor ratio	RN1107	R1/R2	-	0.191	0.213	0.232	—
	RN1108			0.421	0.468	0.515	
	RN1109			1.92	2.14	2.35	

9. Marking

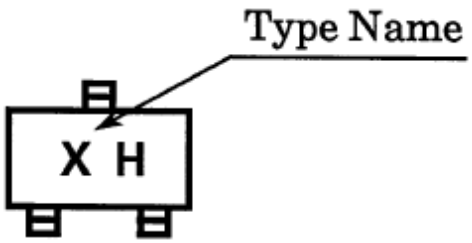


Fig. 9.1 Marking RN1107

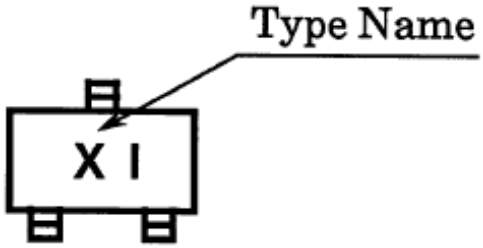


Fig. 9.2 Marking RN1108

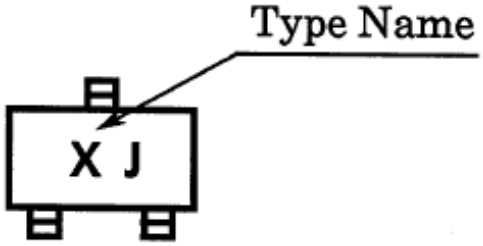


Fig. 9.3 Marking RN1109

10. Characteristics Curves (Note)

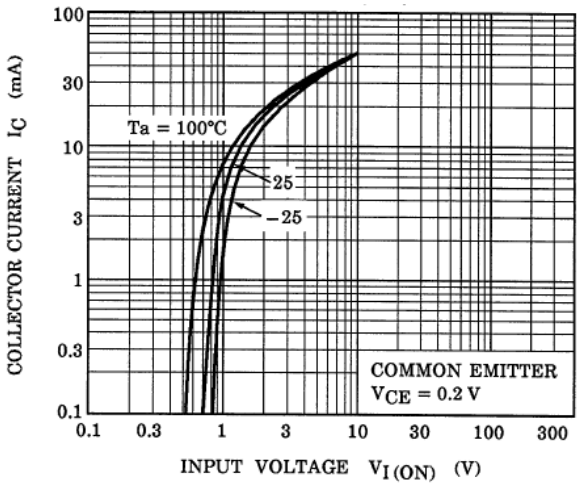


Fig. 10.1 RN1107 I_C-$V_{I(ON)}$

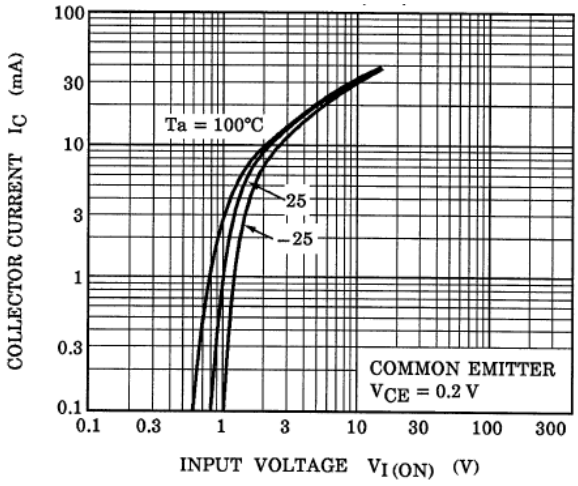


Fig. 10.2 RN1108 I_C-$V_{I(ON)}$

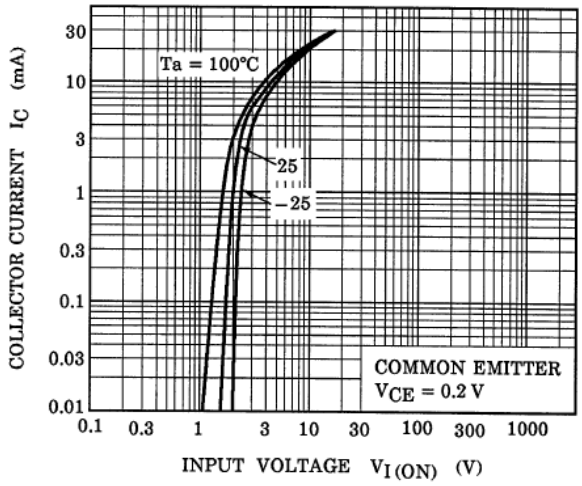


Fig. 10.3 RN1109 I_C-$V_{I(ON)}$

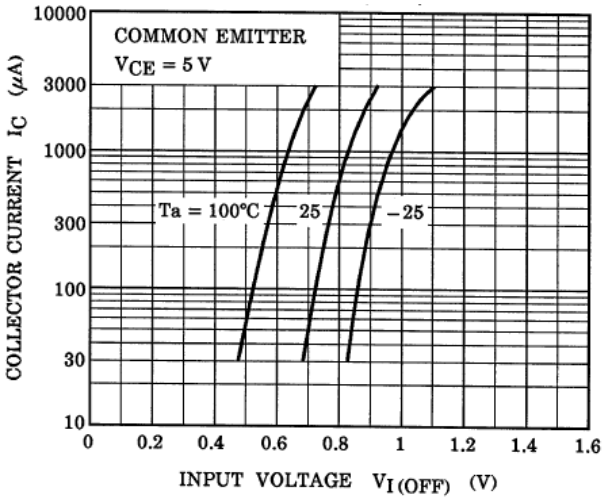


Fig. 10.4 RN1107 I_C-$V_{I(OFF)}$

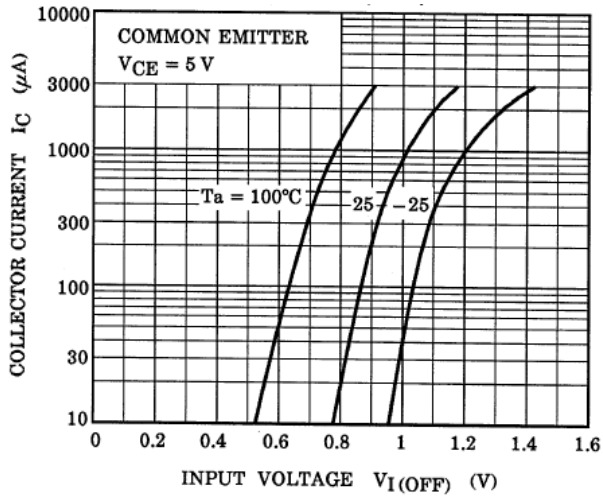


Fig. 10.5 RN1108 I_C-$V_{I(OFF)}$

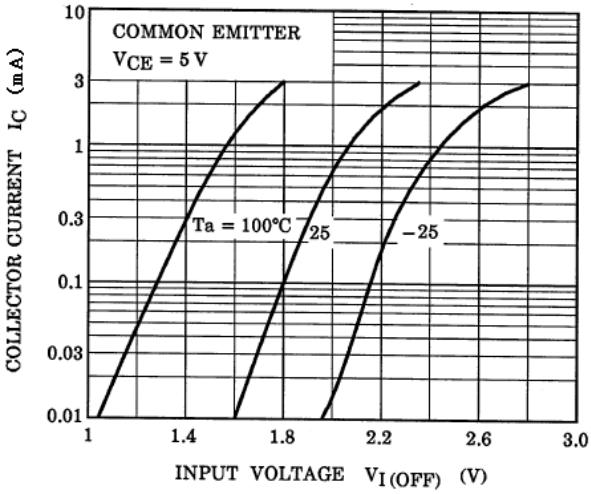


Fig. 10.6 RN1109 I_C-$V_{I(OFF)}$

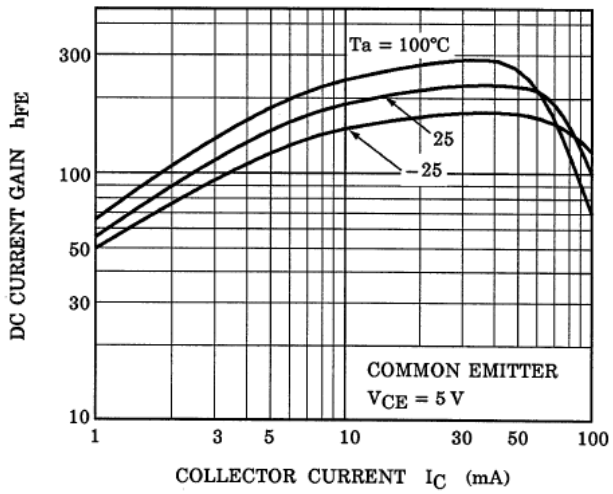


Fig. 10.7 RN1107 h_{FE}-I_C

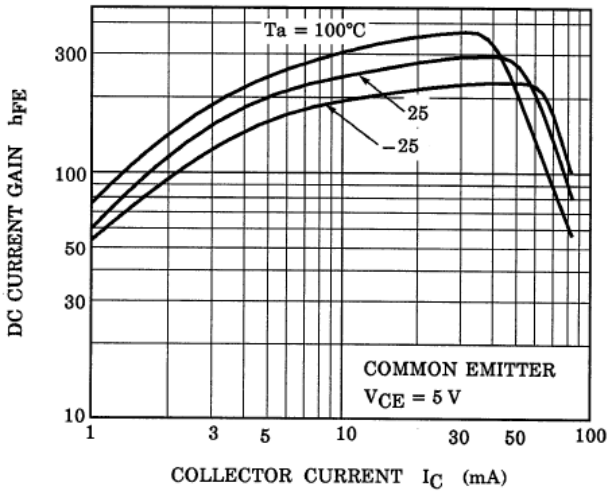


Fig. 10.8 RN1108 h_{FE}-I_C

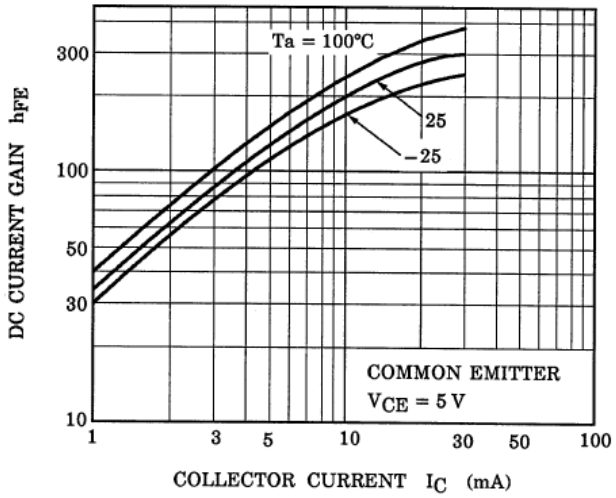


Fig. 10.9 RN1109 h_{FE}-I_C

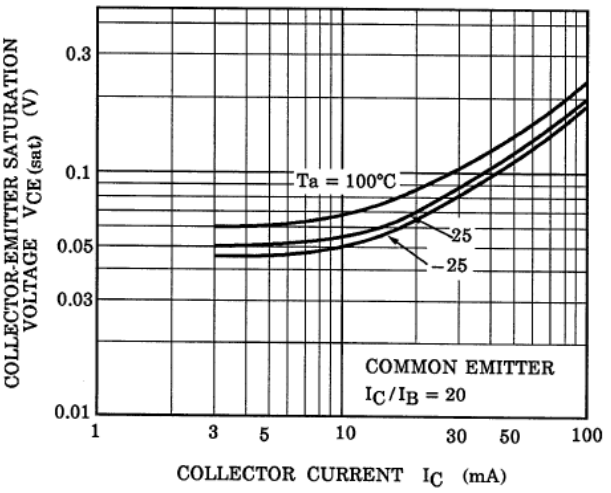


Fig. 10.10 RN1107 $V_{CE(sat)}$-I_C

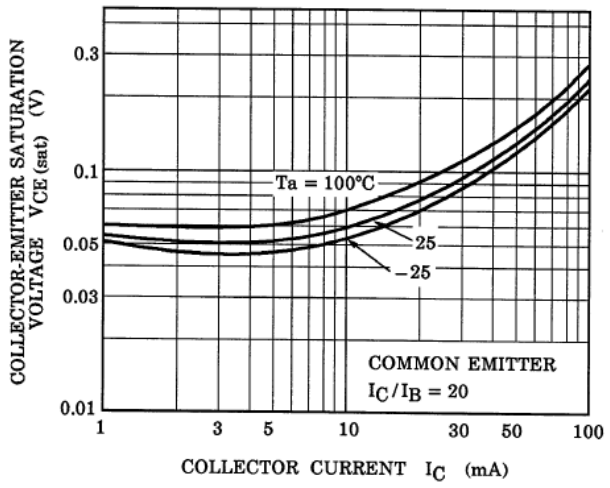


Fig. 10.11 RN1108 $V_{CE(sat)}$-I_C

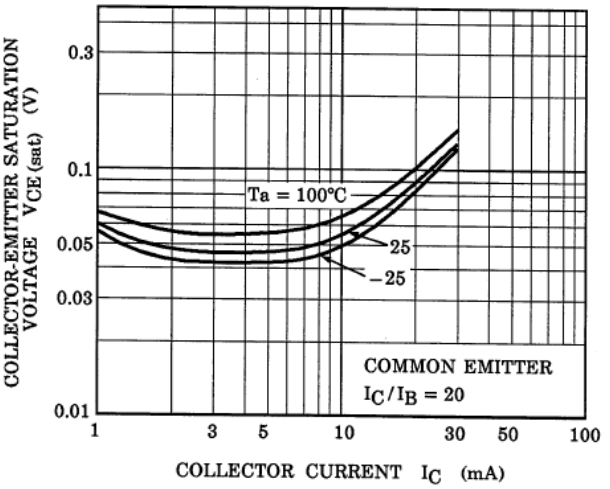
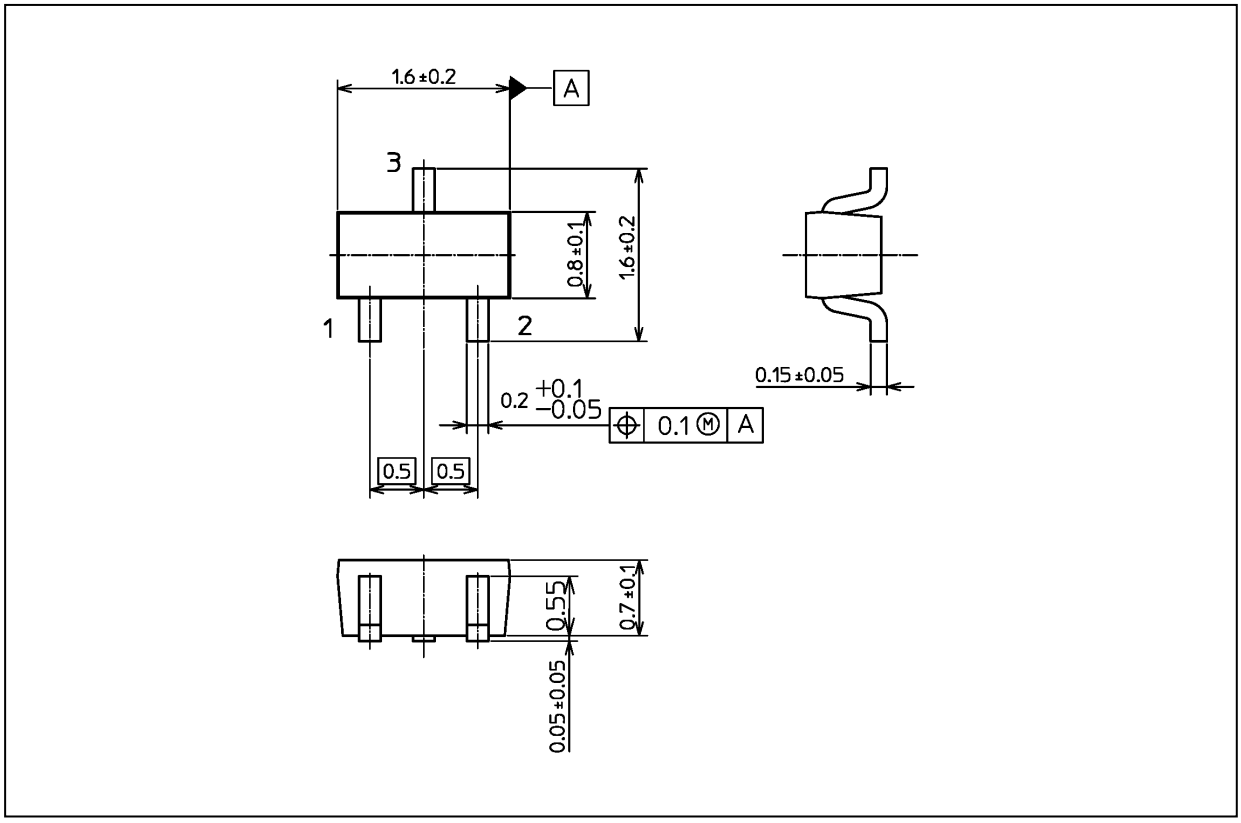


Fig. 10.12 RN1109 $V_{CE(sat)}$-I_C

Note: The above characteristics curves are presented for reference only and not guaranteed by production test, unless otherwise noted.

Package Dimensions

Unit: mm



Weight: 2.4 mg (typ.)

Package Name(s)
TOSHIBA: 2-2H1S
Nickname: SSM

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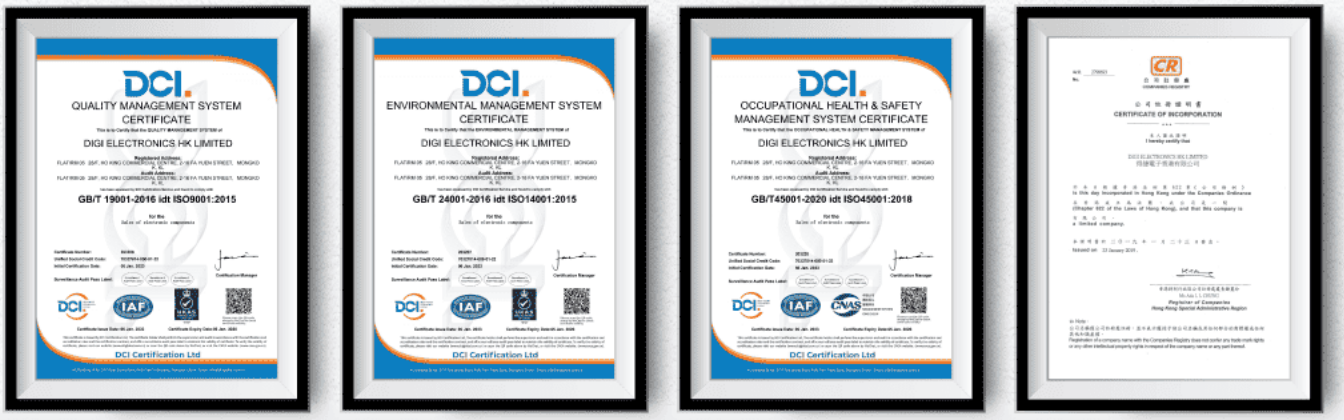

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