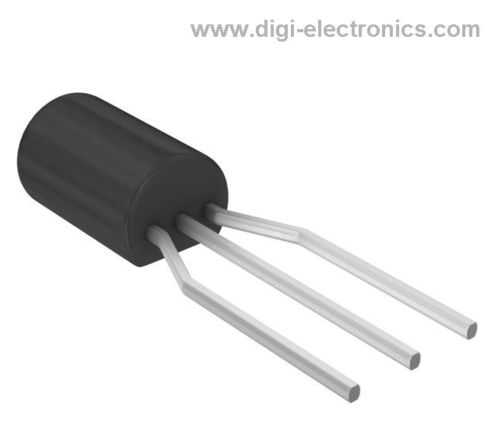
MPSW51ARLRP Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number	MPSW51ARLRP-DG
Manufacturer	onsemi
Manufacturer Product Number	MPSW51ARLRP
Description	TRANS PNP 40V 1A TO92
Detailed Description	Bipolar (BJT) Transistor PNP 40 V 1 A 50MHz 1 W Through Hole TO-92 (TO-226)

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

DiGi is a global authorized distributor of electronic components.

Purchase and inquiry

Manufacturer Product Number:
MPSW51ARLRP

Series:
-

Transistor Type:
PNP

Voltage - Collector Emitter Breakdown (Max):
40 V

Current - Collector Cutoff (Max):
100nA (ICBO)

Power - Max:
1 W

Operating Temperature:
-55°C ~ 150°C (TJ)

Package / Case:
TO-226-3, TO-92-3 Long Body (Formed Leads)

Base Product Number:
MPSW51

Manufacturer:
onsemi

Product Status:
Obsolete

Current - Collector (Ic) (Max):
1 A

Vce Saturation (Max) @ Ib, Ic:
700mV @ 100mA, 1A

DC Current Gain (hFE) (Min) @ Ic, Vce:
60 @ 100mA, 1V

Frequency - Transition:
50MHz

Mounting Type:
Through Hole

Supplier Device Package:
TO-92 (TO-226)

Environmental & Export classification

RoHS Status:
RoHS non-compliant

REACH Status:
REACH Unaffected

HTSUS:
8541.29.0075

Moisture Sensitivity Level (MSL):
1 (Unlimited)

ECCN:
EAR99

MPSW51, MPSW51A

One Watt High Current Transistors

PNP Silicon

Features

- These Devices are Pb−Free and are RoHS Compliant*

MAXIMUM RATINGS

Rating	Symbol	Value	Unit
Collector−Emitter Voltage MPSW51 MPSW51A	V_{CEO}	 −30 −40	Vdc
Collector−Base Voltage MPSW51 MPSW51A	V_{CBO}	 −40 −50	Vdc
Emitter−Base Voltage	V_{EBO}	−5.0	Vdc
Collector Current − Continuous	I_C	−1000	mAdc
Total Device Dissipation @ $T_A = 25°C$ Derate above 25°C	P_D	1.0 8.0	mW mW/°C
Total Device Dissipation @ $T_C = 25°C$ Derate above 25°C	P_D	2.5 20	W mW/°C
Operating and Storage Junction Temperature Range	T_J, T_{stg}	−55 to +150	°C

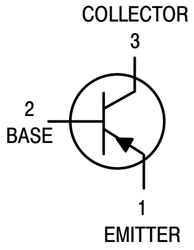
THERMAL CHARACTERISTICS

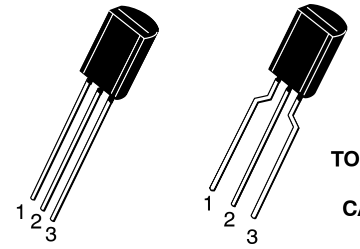
Characteristic	Symbol	Max	Unit
Thermal Resistance, Junction−to−Ambient	$R_{\theta JA}$	125	°C/W
Thermal Resistance, Junction−to−Case	$R_{\theta JC}$	50	°C/W

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

ON Semiconductor®

http://onsemi.com



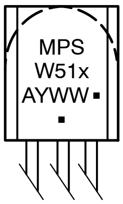


STRAIGHT LEAD

BENT LEAD

TO−92 1 WATT
(TO−226)
CASE 29−10
STYLE 1

MARKING DIAGRAM



x = 51A Devices
A = Assembly Location
Y = Year
WW = Work Week
▪ = Pb−Free Package

(Note: Microdot may be in either location)

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

---

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

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June, 2013 − Rev. 5

Publication Order Number:
MPSW51/D

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise noted)

Characteristic		Symbol	Min	Max	Unit
OFF CHARACTERISTICS					
Collector−Emitter Breakdown Voltage (Note 1) (I_C = −1.0 mAdc, I_B = 0)	MPSW51	$V_{(BR)CEO}$	−30	−	Vdc
	MPSW51A		−40	−	
Collector−Base Breakdown Voltage (I_C = −100 μAdc, I_E = 0)	MPSW51	$V_{(BR)CBO}$	−40	−	Vdc
	MPSW51A		−50	−	
Emitter−Base Breakdown Voltage (I_E = −100 μAdc, I_C = 0)		$V_{(BR)EBO}$	−5.0	−	Vdc
Collector Cutoff Current (V_{CB} = −30 Vdc, I_E = 0)	MPSW51	I_{CBO}	−	−0.1	μAdc
(V_{CB} = −40 Vdc, I_E = 0)	MPSW51A		−	−0.1	
Emitter Cutoff Current (V_{EB} = −3.0 Vdc, I_C = 0)		I_{EBO}	−	−0.1	μAdc
ON CHARACTERISTICS					
DC Current Gain (I_C = −10 mAdc, V_{CE} = −1.0 Vdc)		h_{FE}	55	−	−
(I_C = −100 mAdc, V_{CE} = −1.0 Vdc)			60	−	
(I_C = −1000 mAdc, V_{CE} = −1.0 Vdc)			50	−	
Collector−Emitter Saturation Voltage (I_C = −1000 mAdc, I_B = −100 mAdc)		$V_{CE(sat)}$	−	−0.7	Vdc
Base−Emitter On Voltage (I_C = −1000 mAdc, V_{CE} = −1.0 Vdc)		$V_{BE(on)}$	−	−1.2	Vdc
SMALL−SIGNAL CHARACTERISTICS					
Current−Gain − Bandwidth Product (I_C = −50 mAdc, V_{CE} = −10 Vdc, f = 20 MHz)		f_T	50	−	MHz
Output Capacitance (V_{CB} = −10 Vdc, I_E = 0, f = 1.0 MHz)		C_{obo}	−	30	pF

1. Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%.

ORDERING INFORMATION

Device	Package	Shipping†
MPSW51G	TO−92 (Pb−Free)	5000 Units / Bulk
MPSW51AG	TO−92 (Pb−Free)	5000 Units / Bulk
MPSW51RLRAG	TO−92 (Pb−Free)	2000 / Tape & Reel
MPSW51ARLRAG	TO−92 (Pb−Free)	2000 / Tape & Reel
MPSW51ARLRPG	TO−92 (Pb−Free)	2000 / Ammo Pack

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specifications Brochure, BRD8011/D.

TYPICAL CHARACTERISTICS

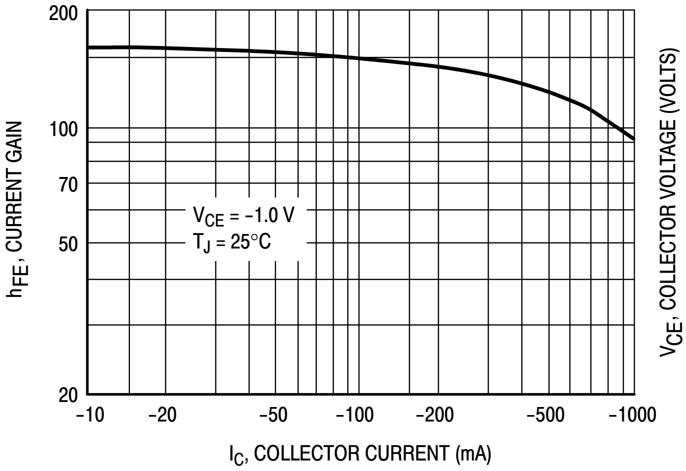


Figure 1. DC Current Gain

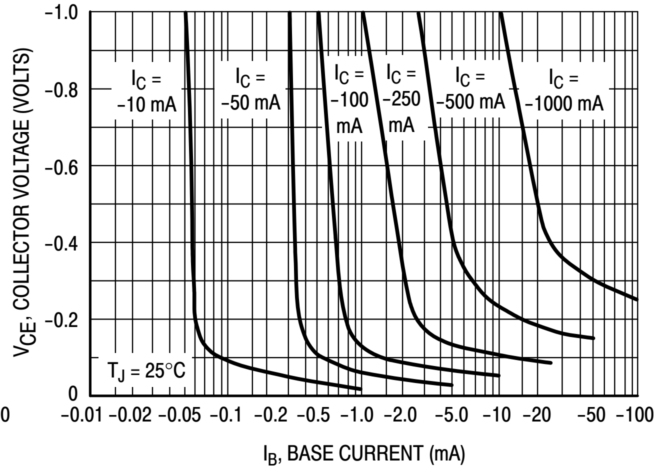


Figure 2. Collector Saturation Region

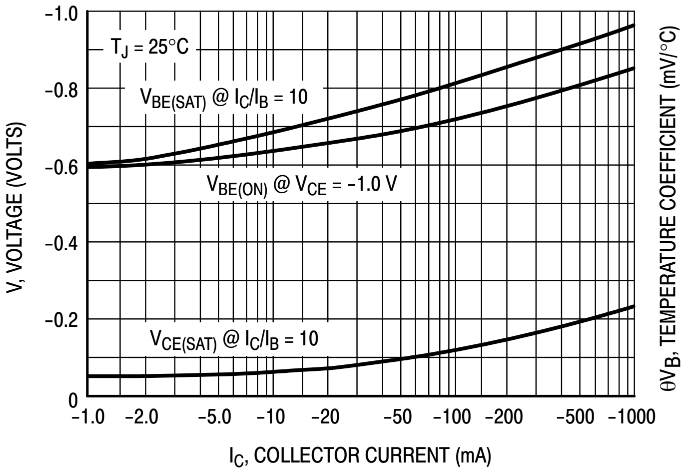


Figure 3. “ON” Voltages

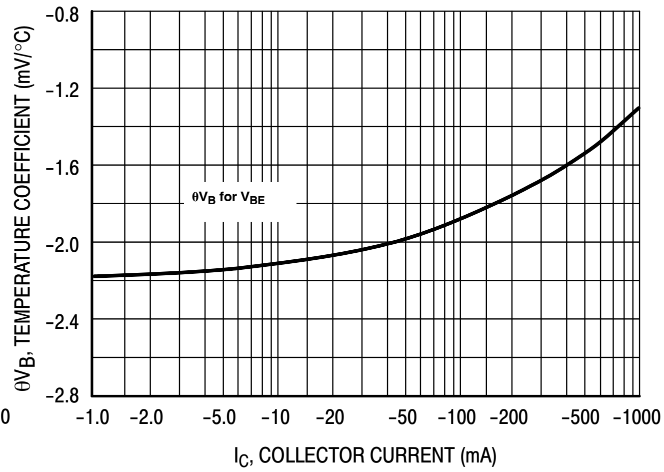


Figure 4. Temperature Coefficient

TYPICAL CHARACTERISTICS

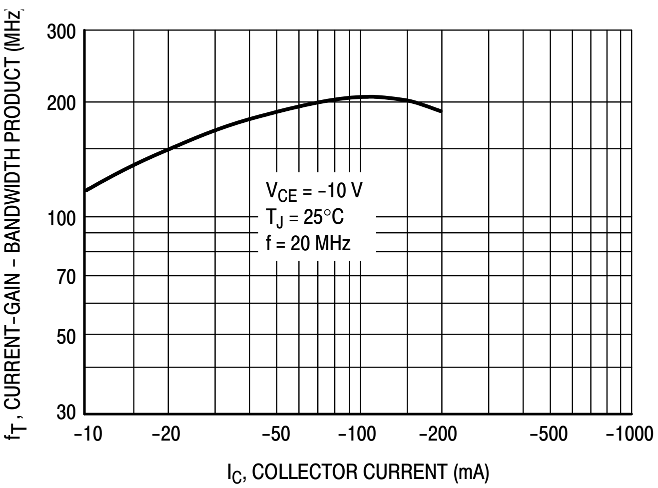


Figure 5. Current Gain — Bandwidth Product

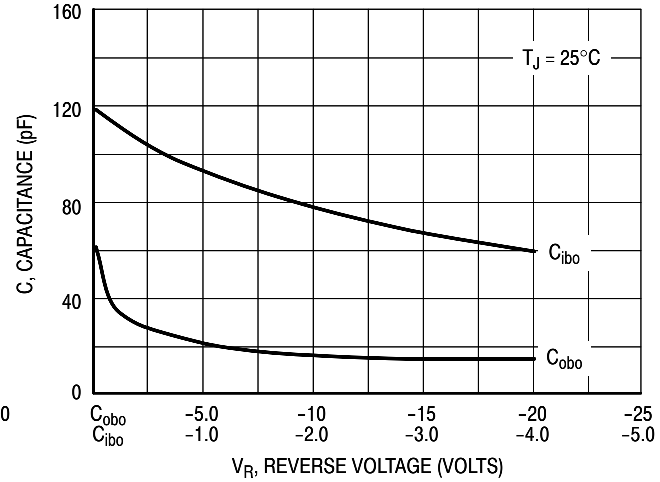


Figure 6. Capacitance

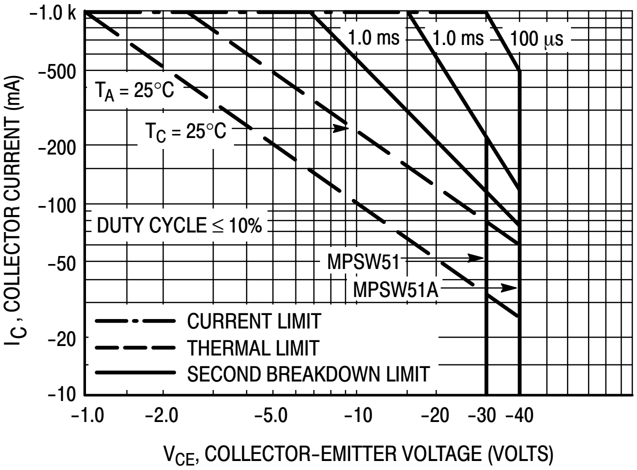


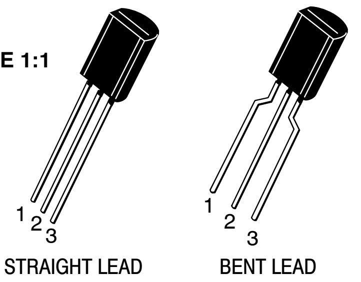
Figure 7. Active Region — Safe Operating Area

MECHANICAL CASE OUTLINE
PACKAGE DIMENSIONS

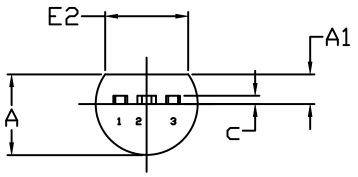
TO−92 (TO−226) 1 WATT
CASE 29−10
ISSUE D

DATE 05 MAR 2021

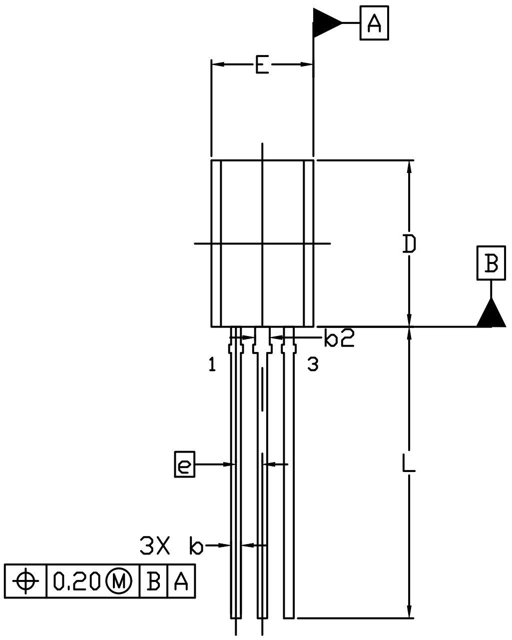
SCALE 1:1



STRAIGHT LEAD



END VIEW



TOP VIEW

NOTES:
1. DIMENSIONING AND TOLERANCING PER ASME Y14.5M, 2009.
2. CONTROLLING DIMENSION: MILLIMETERS
3. DIMENSIONS D AND E DO NOT INCLUDE MOLD FLASH OR GATE PROTRUSIONS.
4. DIMENSION b AND b2 DOES NOT INCLUDE DAMBAR PROTRUSION. LEAD WIDTH INCLUDING PROTRUSION SHALL NOT EXCEED 0.20. DIMENSION b2 LOCATED ABOVE THE DAMBAR PORTION OF MIDDLE LEAD.

	MILLIMETERS		
DIM	MIN.	NOM.	MAX.
A	3.75	3.90	4.05
A1	1.28	1.43	1.58
b	0.38	0.465	0.55
b2	0.62	0.70	0.78
c	0.35	0.40	0.45
D	7.85	8.00	8.15
E	4.75	4.90	5.05
E2	3.90	---	---
e	1.27 BSC		
L	13.80	14.00	14.20

STYLES AND MARKING ON PAGE 3

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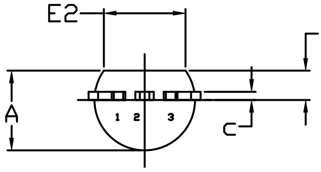
TO−92 (TO−226) 1 WATT
CASE 29−10
ISSUE D

DATE 05 MAR 2021

FORMED LEAD



END VIEW

NOTES:
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2. CONTROLLING DIMENSION: MILLIMETERS
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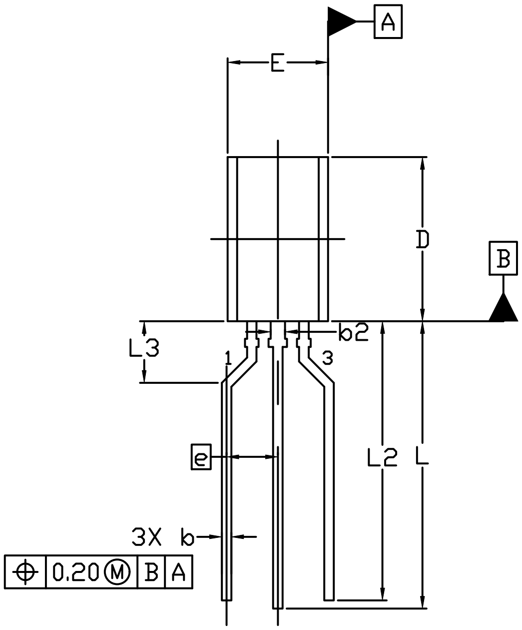
D	7.85	8.00	8.15
E	4.75	4.90	5.05
E2	3.90	---	---
e	2.50 BSC		
L	13.80	14.00	14.20
L2	13.20	13.60	14.00
L3	3.00 REF		



TOP VIEW

STYLES AND MARKING ON PAGE 3

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TO−92 (TO−226) 1 WATT
CASE 29−10
ISSUE D

DATE 05 MAR 2021

STYLE 1:
PIN 1. EMITTER
2. BASE
3. COLLECTOR

STYLE 2:
PIN 1. BASE
2. EMITTER
3. COLLECTOR

STYLE 3:
PIN 1. ANODE
2. ANODE
3. CATHODE

STYLE 4:
PIN 1. CATHODE
2. CATHODE
3. ANODE

STYLE 5:
PIN 1. DRAIN
2. SOURCE
3. GATE

STYLE 6:
PIN 1. GATE
2. SOURCE & SUBSTRATE
3. DRAIN

STYLE 7:
PIN 1. SOURCE
2. DRAIN
3. GATE

STYLE 8:
PIN 1. DRAIN
2. GATE
3. SOURCE & SUBSTRATE

STYLE 9:
PIN 1. BASE 1
2. EMITTER
3. BASE 2

STYLE 10:
PIN 1. CATHODE
2. GATE
3. ANODE

STYLE 11:
PIN 1. ANODE
2. CATHODE & ANODE
3. CATHODE

STYLE 12:
PIN 1. MAIN TERMINAL 1
2. GATE
3. MAIN TERMINAL 2

STYLE 13:
PIN 1. ANODE 1
2. GATE
3. CATHODE 2

STYLE 14:
PIN 1. EMITTER
2. COLLECTOR
3. BASE

STYLE 15:
PIN 1. ANODE 1
2. CATHODE
3. ANODE 2

STYLE 16:
PIN 1. ANODE
2. GATE
3. CATHODE

STYLE 17:
PIN 1. COLLECTOR
2. BASE
3. EMITTER

STYLE 18:
PIN 1. ANODE
2. CATHODE
3. NOT CONNECTED

STYLE 19:
PIN 1. GATE
2. ANODE
3. CATHODE

STYLE 20:
PIN 1. NOT CONNECTED
2. CATHODE
3. ANODE

STYLE 21:
PIN 1. COLLECTOR
2. EMITTER
3. BASE

STYLE 22:
PIN 1. SOURCE
2. GATE
3. DRAIN

STYLE 23:
PIN 1. GATE
2. SOURCE
3. DRAIN

STYLE 24:
PIN 1. EMITTER
2. COLLECTOR/ANODE
3. CATHODE

STYLE 25:
PIN 1. MT 1
2. GATE
3. MT 2

STYLE 26:
PIN 1. V_{CC}
2. GROUND 2
3. OUTPUT

STYLE 27:
PIN 1. MT
2. SUBSTRATE
3. MT

STYLE 28:
PIN 1. CATHODE
2. ANODE
3. GATE

STYLE 29:
PIN 1. NOT CONNECTED
2. ANODE
3. CATHODE

STYLE 30:
PIN 1. DRAIN
2. GATE
3. SOURCE

STYLE 31:
PIN 1. GATE
2. DRAIN
3. SOURCE

STYLE 32:
PIN 1. BASE
2. COLLECTOR
3. EMITTER

STYLE 33:
PIN 1. RETURN
2. INPUT
3. OUTPUT

STYLE 34:
PIN 1. INPUT
2. GROUND
3. LOGIC

STYLE 35:
PIN 1. GATE
2. COLLECTOR
3. EMITTER

GENERIC MARKING DIAGRAM*

XXXXX
XXXXX
ALYW▪
▪

XXXX = Specific Device Code
A = Assembly Location
L = Wafer Lot
Y = Year
W = Work Week
▪ = Pb−Free Package

(Note: Microdot may be in either location)

*This information is generic. Please refer to device data sheet for actual part marking. Pb−Free indicator, “G” or microdot “▪”, may or may not be present. Some products may not follow the Generic Marking.

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CR

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I hereby certify that

is this day incorporated in Hong Kong under the Companies Ordinance (Chapter 622 of the Laws of Hong Kong), and that this company is a limited company.

Registrar of Companies
Hong Kong Special Administrative Region

ASA

MEMBERSHIP
Certificate

The Aviation Suppliers Association has enrolled as a Regular Member

DIGI ELECTRONICS HK LIMITED

Michele Dickstein
President

dun & bradstreet

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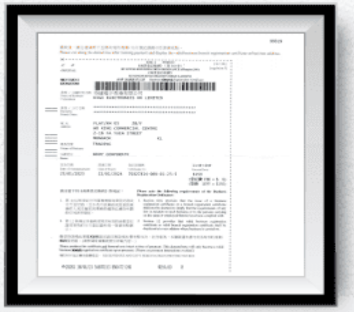
D-U-N-S® Registered™ Business



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