



致強科技股份有限公司
FORT Technology Co.,Ltd

A specialist
Metal Alloy Current Sensing Resistors
manufacturer in Taiwan

Passive
Component

Metal Alloy Current Sensing Resistors

































Ultra Low Ohm $0 \sim 1 \Omega$
Surface Mount (SMD)
High Power

OHSAS18001, ISO/TS16949
ISO14001, ISO9001 certificated



www.fort-tec.com

Features

-  Functions include current detecting, current shunt, anti-pulse, circuit protection
-  Wide range of milliohm value (ultra low resistance 0 ~ 1 Ω)
-  Wide range of flat chip sizes: 0805, 1206, 2010, 2512, 2817, 2725, 2728, 4527...etc.
-  Metal plate for resistive element (fusing point up to 1,650°C)
-  Metal alloy materials are stable for reliability, durability and for precision
(tolerance $\pm 1\%$ or $\pm 0.5\%$)
-  Patent: copper electroformed electrodes; heat dissipation in construction
-  Low T.C.R. down to $\pm 50\text{ppm}/^\circ\text{C}$ and lower
-  Wave soldering and reflow soldering
-  Operating temperature range $-55^\circ\text{C} \sim +170^\circ\text{C}$
-  All FORT resistors: metal materials, surge resistance, sulfur resistance, low T.C.R.,
RoHS 2011/65/EU compliant, Halogen free, Antimony free...etc. for easy selection
-  AEC-Q200 qualified for automotive grade (with ISO/TS16949)
-  Flame retardant materials to meet UL94 V-0 requirement
-  Miniaturized; Surface mounted device (SMD) for SMT (automatic insertion)
-  With in-house technology, constantly developing new spec to fulfill various applications
-  Customized spec could be discussed if feasible q'ty is demanded
-  應用範圍包括電流檢知、分流及防脈衝...等應用保護
-  超低阻值 ($\leq 1 \Omega$) 範圍廣，適合大電流檢知應用
-  電阻主體採用穩定的合金板材料(熔點 $1,650^\circ\text{C}$)
-  可靠穩定的高精度電流偵測電阻 (公差 $\pm 1\%$ 或 $\pm 0.5\%$)
-  多樣電阻尺寸: 0805、1206、2010、2512、2817、2725、2728、4527...等
-  專利鍍銅結構與端極，有助散熱
-  低溫度係數T.C.R. $\leq \pm 50\text{ppm}/^\circ\text{C}$ 或更低
-  操作溫度範圍廣 $-55^\circ\text{C} \sim +170^\circ\text{C}$
-  阻燃型材料符合UL94 V-0的要求
-  符合車規AEC-Q200 系列電阻可供選購 (ISO/TS16949認證)
-  全系列: 金屬合金板材料，符合歐洲RoHS 2011/65/EU、溫度係數低、無鎘、無鹵、耐突波、防硫化 ...等特性，方便選用購買
-  電阻產品電極端使用錫電鍍，適合於無鉛與含鉛的焊接製程
-  超薄短小適合小型裝置，微小貼片(SMD)，適用自動打件組裝(SMT)
-  適用於回流焊和波峰焊
-  提供具有價格競爭力之優良品質電阻
-  具有自主研發能力，不定時研發提供新規格
-  大量訂購需求，可作客製化規格討論

Application

-  Power supply, power conversion, battery pack, wireless charger, portable charger, fast charging...etc.
-  AC/DC, DC/DC, power Inverter, converter, adapter...etc.
-  Battery management system (BMS), electricity charger/station...etc.
-  Automotive: electric control unit (ECU), ABS, air conditioner, power mirrors, circulation, pumps, LED lighting, EPS, EPB...etc.
-  Power multi-plug (extension) sockets, sports equipment/devices, house e-appliance...etc.
-  Smart meters, energy meters...etc.
-  Energy storage system, UPS...etc.
-  Motor drive, drive control, servo, stepping motors...etc.
-  Power hand tools, projectors, drone...etc.
-  Lighting, LED drive, LED dimmer...etc.
-  IPC, base station...etc.
-  Others
-  電源供應, 電源轉換, 電池保護, 變頻, AC/DC, DC/DC, 快充...等
-  車用: 電子控制系統(ECU), 大燈, 汽車電子助力轉向, 電子駐車...等
-  電動手工具, 電子菸, 投影機, 無人機...等
-  家用電器, 智慧排插, 能源轉換, 變頻空調...等
-  伺服, 工業電腦, 馬達驅動, 步進馬達...等
-  智能電錶, 不斷電UPS...等
-  LED驅動, LED調光器...等
-  其他



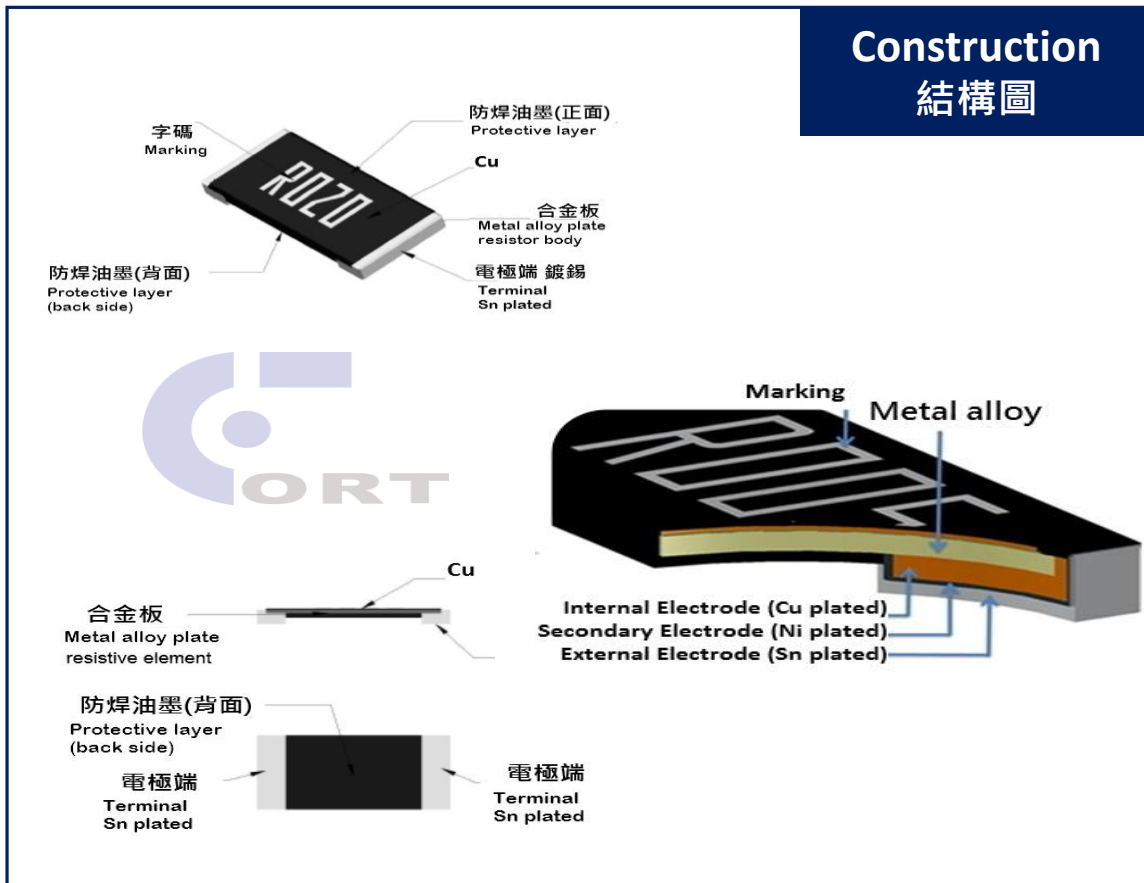
FORT resistors 致強電阻

Metal alloy milliohm shunt resistors 金屬合金毫歐分流電阻

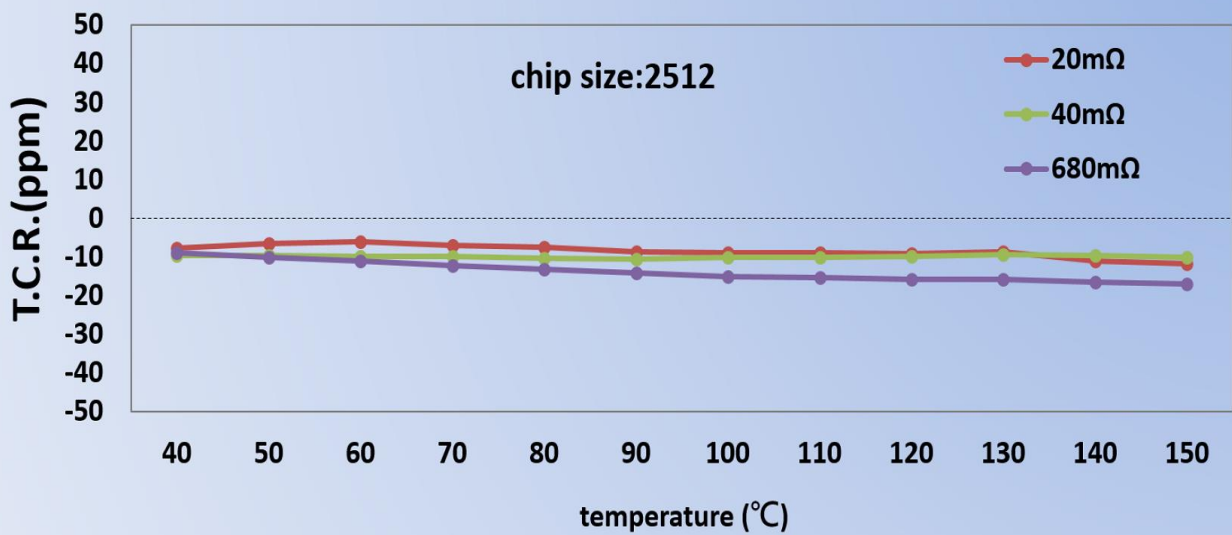
Fixed Resistors High Power Ultra Low Ohm 0~1Ω Current Sense

series 系列	Model (chip size) 型號/尺寸	Max. Rating Power (W) range 功率範圍	Resistance Range (Ω) 阻值範圍	all series 全系列
CUM	0805, 1206, 2010, 2512, 2817, 2725, 2728, 4527	0.5 ~ 5	0.00025 ~ 1	RoHS compliant Halogen free無鹵 Antimony free無銻
HPR	1206	1.5	0.001 ~ 0.1	anti-surge 耐突波 anti-sulfur 抗硫化
CPM	0805, 1206, 2512, 2817, 2725, 4527	0.5 ~ 5	jumper 跳線電阻	low T.C.R.低溫度係數 metal alloy plate金屬 合金板
AEC	1206, 2512, 2817, 2725, 2728, 4527	0.5 ~ 5	0.00025 ~ 1	surface mounted SMD 貼片型
AEC-Q200 qualified; automotive grade 車用符合				

* Updated spec info as per datasheet

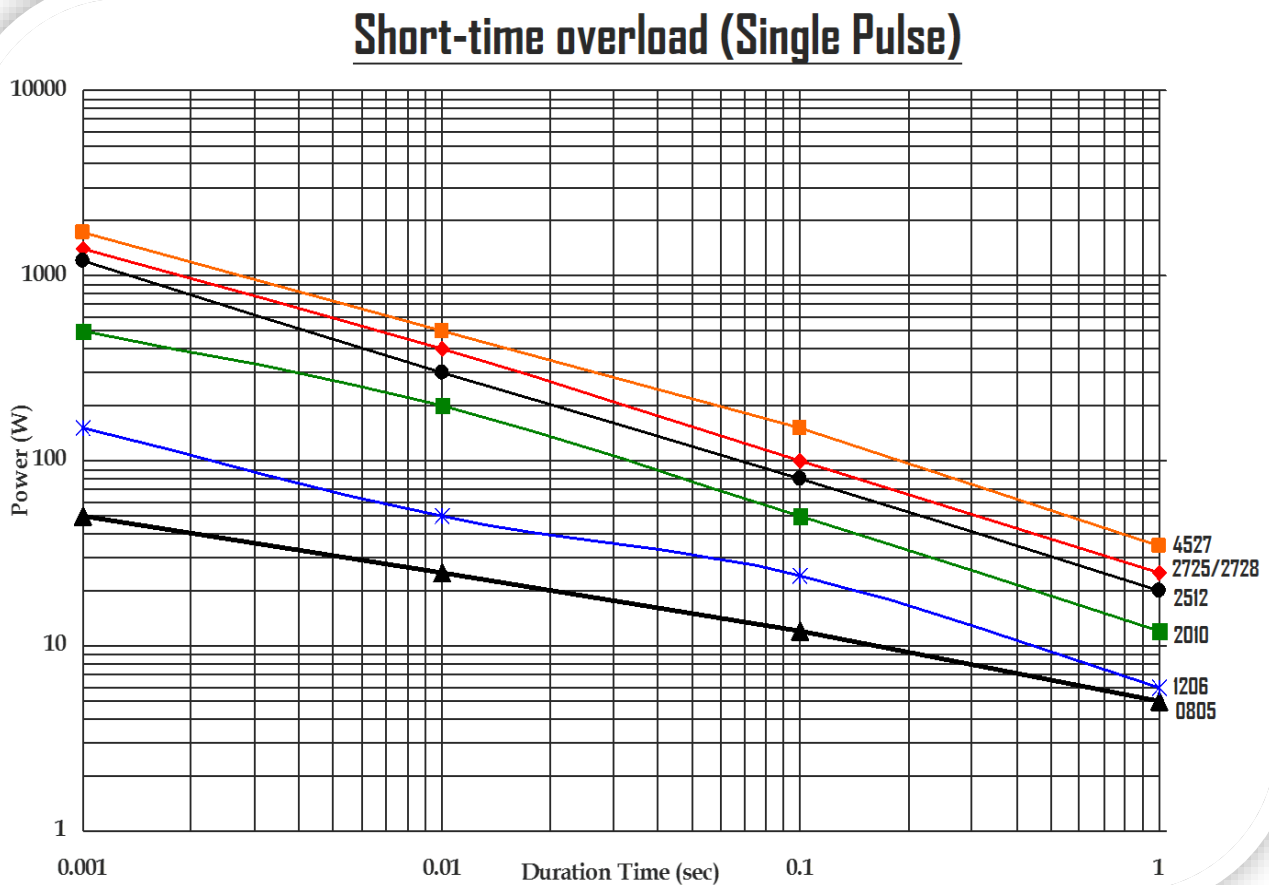


T.C.R. change at different temperature



*Lower T.C.R. than standard configuration might be requested by demand as options according to each resistance value. 若需較低溫度係數,可討論選配可能.

Surge power 耐突波



Taiwan台灣
高雄Kaohsiung
台中Taichung
東莞Dongguan

About FORT

致強科技股份有限公司是一群具有機電整合、金屬材料加工、冶金製程以及豐富電子零組件實務經驗的技術團隊。專業團隊擁有被動元件產業20年以上的研發與製造的經驗。致力持續研發高功率、超低阻值0到1Ω、低TCR的金屬合金電流檢測電阻，有ISO/TS16949、ISO14001、OHSAS18001與ISO9001認證，堅持出廠電阻品質管制與滿足客戶需求，並提供完整的售後服務，使致強科技成為以研發、製造、生產高品質金屬板電流檢測電阻並銷售全球的台灣優良廠商。

FORT Technology Co., Ltd manufactures Metal Alloy Current Sensing Resistors (0 ~ 1 Ω) in Taiwan with ISO9001, ISO14001, OHSAS18001 and ISO/TS16949 certificated.

We are a professional team of engineering specialists with years of experiences in mechatronics, metal processing and metallurgical processing to develop and manufacture metal plate current detect resistors.

With in-house technology, we are capable of constantly developing, manufacturing and supplying metal alloy milliohms shunt resistors (0~1Ω) from Taiwan to worldwide markets.



Ordering Information 訂購訊息

FORT's Part Number system 致強料號

CUM **2512** **-** **3** **4** **F** **R003**

Series 系列	Model (Size) 種類(尺寸)	Power Rating (Watts) 額定功率	Packing 包裝	Tolerance 公差	Resistance 電阻值
CUM	0805	• B: 0.5W	<ul style="list-style-type: none"> • 1:1,000pcs • 2:2,000pcs • 4:4,000pcs • 5:5,000pcs 	<ul style="list-style-type: none"> • D= ±0.5%; • F= ±1.0%; • G= ±2.0%; • J= ±5.0%; 	e.g.: R003=3mΩ R100=100mΩ
HPR	1206	• C:0.75W			
	2010	• 1: 1.0W			
AEC	2512	• D : 1.5W			
	2725	• 2: 2.0W			
	2728	• 3: 3.0W			
	2817	• 4: 4.0W			
	4527	• 5: 5.0W			

Standard packing quantity (SPQ)

單膠盤可裝數量



Series 系列	Model (size) 尺寸/型號	Tape width 寬度	Diameter 直徑	Pieces per reel 每個膠盤
CUM HPR AEC CPM	0805	8 mm/embossed plastics	178mm/7"	5,000pieces
	1206			5,000pieces
	2010			4,000pieces
	2512	12 mm/embossed plastics		4,000pieces
	2725			2,000pieces
	2728			2,000pieces
	2817			1,000pieces
	4527			24 mm/embossed plastics

*Updated info as per datasheet

Metal alloy current sensing resistors

金屬板 電流檢知電阻

(SMD貼片)

AEC series



Specification

Model 型號	Max. Rating Power 最大額定功率 (W)	Max. Rating Current 最大額定電流 (A)	Max. Overload Current 最大過負載電流 (A)	T.C.R. 溫度係數 (ppm/°C)	Resistance Value 阻值 mΩ (Tolerance %)		Operating Temperature 操作溫度
					D (±0.5%)	F (±1%) G (±2%) J (±5%)	
AEC 1206	# of Terminals 電極端數目: 2	1	31.62	54.77	≤ ±50	7 ~ 100	-55 ~ +170 °C
AEC 2512		2	63.25	141.42		7 ~ 450	
		3	77.46	134.16		7 ~ 100	
AEC 2817		3	54.77	109.54		7 ~ 200	
AEC 2725		4	126.49	252.98		--	
AEC 4527		3	2.45	4.24		501 ~ 1000	
		5	70.71	122.47		7 ~ 500	

More chip sizes and spec for AEC series are available. Please feel free to check with us for demand.

Application

BLDC motor control, EV charger, Battery Management System (BMS), DC-DC converter, EMI filter, ECU Power Module, Crane system control, Car EPS(Electrical Power Steering 汽車電子助力轉向), 電子駐車 EPB (Electric power brake), 自動啟停系統 STOP&START, Starter, control, Air conditioner, Wind 電動座椅調節 Electric seat Power mirrors, 電動天窗控制 Electronic expansion valve, 循環水死系統 ABS Anti-lock Braking Injection, 電動汽車空調壓縮機 EV-air conditioner compressor, Regulator 調節器, head light (LED), 隨動轉向系統 (主動轉向式頭燈) Adaptive Headlights System...etc.



Car fan control, cooling system shield wiper, power window switch, adjustment, 電動車外后視鏡自動折 Electric sunroof control, 電子膨脹閥泵 Circulating water pump, 剎車防抱 System, 汽油缸內直噴 Gasoline Direct

ISO9001, ISO14001, OHSAS18001, ISO/TS16949
RoHS compliant, Halogen free, Antimony free

Metal alloy current JUMPER resistors 金屬板 電流檢知 跳線電阻 (SMD貼片) CPM series



Specification

Model 型號	Rating Power 最大額定功率 (W)	Max. Loading Current 最大過負載 電流 (A)	Operating Temperature 操作溫度	Application 應用
CPM0805	0.5	50	-55 ~ +150 °C	Surface mounted Metal Alloy Current Jumper Resistors in high-power applications, metal alloy Jumper Resistors (zero Ohm) to replace jumper wire for better reliability or to replace copper coin for cost concerns; for automatic insertion (SMT) 金屬板貼片跳線電阻; 大電流應用中,比傳統跳線更耐用穩定,有時也可取代價格較高的銅塊;適用SMT自動打件
CPM1206				
CPM2512				
CPM2817				
CPM2725				
CPM4527				
# of Terminals 電極端數目: 2		1	70.7	
		2	100	
		3	122	
		4	140	
		5	158	

Design and spec are subject to change without prior notice.

FORT's Part Number system 致強料號

Series 系列	Model (Size) 種類(尺寸)	Power Rating (Watts) 額定功率(瓦特)	Packing 包裝	Tolerance 公差	Resistance 電阻值
CPM	0805 1206 2512 2725 2817 4527	<ul style="list-style-type: none"> B: 0.5W, 1: 1.0W, 2: 2.0W, 3: 3.0W, 4: 4.0W, 5: 5.0W 	<ul style="list-style-type: none"> 1:1,000pcs 2:2,000pcs 4:4,000pcs 5:5,000pcs 	<0.20 mΩ	R000 = below 0.20 mΩ

Metal alloy current sensing resistors

金屬板 電流檢知電阻

(SMD貼片)

CUM , HPR series



Specification

Model 型號	Max. Rating Power 最大額定功率 (W)	Max. Rating Current 最大額定電流 (A)	Max. Overload Current 最大過負載電流 (A)	T.C.R. 溫度係數 (ppm/°C)	Resistance Value 阻值 mΩ (Tolerance %)		Operating Temperature 操作溫度
					D (±0.5%)	F (±1%) G (±2%) J (±5%)	
CUM0805	0.75	15.81	31.62	≤ ±50	10~100	3~100	-55 ~ +170°C
	1	18.26	36.51		10	3~10	
CUM1206	0.5	3.13	6.26		51~100	51~100	
	0.75	5.98	11.95		21~50	21~50	
HPR1206	1	31.62	63.25		7~100	1~100	
	1.5	38.73	67.08		7~100	1~100	
CUM2010	0.75	3.25	7.27		71~100	71~100	
	1	5.68	12.70		31~70	31~70	
	1.5	38.73	77.46		7~100	1~100	
CUM2512	1	44.72	100.00		7~680	0.5~680	
	2	63.25	141.42		7~450	0.5~450	
	3	77.46	134.16		7~100	0.5~100	
CUM2725	4	126.49	252.98		--	0.25~3	
CUM2728	4	31.62	54.77		7~600	4~600	
CUM2817	3	54.77	109.54		7~200	1~200	
CUM4527	3	2.45	4.24		501~1000	501~1000	
	5	70.71	122.47	7~500	1~500		

Customized spec is not listed here; please check with us.

With in-house technology, customized spec could be discussed if feasible q'ty is demanded.

ISO9001, ISO14001, OHSAS18001, ISO/TS16949
RoHS compliant, Halogen free, Antimony free

SMD Metal Alloy Current Sensing Resistors

致強 阻值選用參考表

Reference for selecting resistance value

"\ " =not-available "O" =available
 These spec are with tolerance 1%. The listed spec is already demanded. [Please contact with us for any spec not listed here for its availability.](#) Customized spec could be discussed if feasible q'ty is demanded.

CUM0805			CUM1206				HPR1206		CUM2010			
阻值 resistance value (mΩ)	0.75W	1W	阻值 resistance value (mΩ)	0.5W	0.75W	1W	阻值 resistance value (mΩ)	1.5W	阻值 resistance value (mΩ)	0.75W	1W	1.5W
3		O	1			O	1	O	1			O
5		O	1.5			O	2	O	2			O
10		O	2			O	3	O	2.5			O
15	O		2.5			O	4	O	3			O
20	O		3			O	5	O	4			O
43	O		4			O	6	O	5			O
			5			O	7	O	6			O
			6			O	8	O	7			O
			7			O	10	O	8			O
			8			O	15	O	10			O
			10			O	20	O	15			O
			15			O	25	O	20			O
			20			O	30	O	25			O
			25		O	O	35	O	30			O
			30		O	O	40	O	40		O	O
			35		O	O	50	O	50		O	O
			40		O	O	60	O	60		O	O
			50		O	O	70	O	70		O	O
			60	O		O	80	O	80	O		O
			70	O		O	100	O	100	O		O
			80	O		O						
			100	O		O						

CUM2512				CUM2817		CUM2725		CUM2728		CUM 4527		
阻值 resistance value (mΩ)	1W	2W	3W	阻值 resistance value (mΩ)	3W	阻值 resistance value (mΩ)	4W	阻值 resistance value (mΩ)	4W	阻值 resistance value (mΩ)	3W	5W
0.5	O	O	O	1	O	0.25	O	4	O	0.5		O
1	O	O	O	2	O	0.5	O	5	O	1		O
1.5	O	O	O	3	O	1	O	6	O	1.5		O
2	O	O	O	4	O	1.5	O	7	O	2		O
3	O	O	O	5	O	2	O	8	O	3		O
4	O	O	O	6	O	2.5	O	10	O	4		O
5	O	O	O	7	O	3	O	15	O	5		O
6	O	O	O	8	O			20	O	6		O
7	O	O	O	10	O			25	O	7		O
8	O	O	O	15	O			30	O	8		O
10	O	O	O	20	O			40	O	10		O
15	O	O	O	25	O			50	O	15		O
20	O	O	O	30	O			60	O	20		O
25	O	O	O	40	O			65	O	25		O
30	O	O	O	50	O			70	O	30		O
40	O	O	O	60	O			80	O	40		O
50	O	O	O	70	O			100	O	50		O
60	O	O	O	80	O			120	O	60		O
65	O	O	O	90	O			150	O	70		O
70	O	O	O	100	O			180	O	80		O
80	O	O	O	120	O			200	O	100		O
100	O	O	O	150	O			220	O	120		O
120	O	O		180	O			250	O	150		O
135	O	O		200	O			270	O	180		O
150	O	O						300	O	200		O
180	O	O						330	O	220		O
200	O	O						360	O	250		O
220	O	O						400	O	300		O
250	O	O						430	O	330		O
300	O	O						470	O	360		O
330	O	O						500	O	400		O
360	O	O						560	O	430		O
400	O	O								470		O
430	O	O								500		O
470	O									560	O	
500	O									600	O	
560	O									680	O	
600	O									750	O	
680	O									820	O	
										1000	O	

Design and spec are subject to change without prior notice. Please refer to datasheet for more details.



致強科技股份有限公司
FORT Technology Co.,Ltd

金屬板微歐姆電阻
台灣專業製造廠

被動元件

金屬合金 電流偵測 電阻

超低阻值 $0\sim 1\ \Omega$
微小貼片SMD
大電流

OHSAS18001 , ISO14001
ISO/TS16949, ISO9001認證



www.fort-tec.com