

# endrichnews

www.endrich.com



## What your members of the Government can learn from Donald Trump!

It has been four weeks since the inauguration of the new president of the United States. Prior to his election, his announcements already left the world startled. In the following, his ten most important statements shall be commented critically:

### 1.) Villainize the political opponent, make verifiably false allegations, repeat them often enough and the masses will believe it.

☹️ As Christians, we believe in the Ten Commandments. But the Ninth Commandment is very often forgotten. It states: Thou shalt not bear false witness against thy neighbour. . .

### 2.) Constant repetition of allegations and verifiable lies will make them seem believable.

☹️ In social networks it seems to be becoming a sport to spread fakes (fake news) and to feed off the catastrophic effect. Just think of the little Russian girl in Berlin that was supposedly kidnapped and abused by immigrants. In truth such a little girl never existed.

### 3.) Praise protectionism, glamorize it and promise that this will make everything better.

☹️ By example of the Brexit in England we will be able to study the consequences of such a Brexit. It is easy to forget that besides a history of once being the biggest pirates, the British had the British East India Company which traded with India on a large scale and thus substantially contributed to the prosperity of England in the 18th and 19th century.

### 4.) Declare an absolute stop of immigration and demonize immigration.

☹️ Aside from the few 100.000 native American Indians, the entire population of the United States is composed of over 300 million immigrants. One should rather say "back to the roots".

### 5.) Immigrants are a burden for every country, consisting of child molesters and rapists and will take away jobs from US citizens.

☹️ The founders of Google, Amazon, Uber and Tesla are US citizens in the second generation. In Silicon Valley for example, one of the largest sources and breeding grounds of newest technical know-how, there are thousands of employees from China, India and other countries on staff.

### 6.) Bad-mouth lawyers and the entire judicial system and reap the scornful applause of the crowds.

☹️ A modern democracy is only able to function via the separation of powers – executive branch, legislative body and judicial. Whoever does not accept this does not want democracy.

### 7.) Abolition of Obama's Patient Protection and Affordable Care Act (ObamaCare)

☹️ For Germany it remains the outstanding achievement of Bismarck who introduced a pension and healthcare system. Even if these

systems were later made worse with so-called corrections, where would we be today without these laws? In the United States there is no compulsory insurance and thus millions of citizens are left without healthcare.

### 8.) Pretend to want to provide jobs for the unemployed.

☹️ In Germany we have a federal employment agency (Bundesagentur für Arbeit) as well as local employment agencies (Arbeitsagenturen). It was the final big achievement of former Chancellor Schröder to introduce the Agenda 2010 which was very effective despite being unpopular. The United States consist of 50 federal States with independent administrations and legislation which failed to purposefully eliminate unemployment – just as the French, Spanish, Italian and British governments failed to do. One example from Germany is the Ruhrgebiet (an area around the river Ruhr comprising of industrial cities such as Essen, Duisburg, Bochum and others). Up until the end of WWII the area was entirely dependent upon coal and steel and managed to create an entirely new industrial structure after the war.

### 9.) The United States have a poor standard of education and while Mr. Trump attended university it appears that he was more concerned with baseball because it seems that he never saw the inside of one of the elite universities of the United States, which certainly convey an excellent education.

☹️ Our school system of primary school (Grundschule), secondary school (Realschule), community school (Gemeinschaftsschule) etc. offers adolescents excellent options so that they do not have to go through life illiterate. And with the dual system of vocational school and practical experience in the industry we may have the best system to prepare young people for their jobs. I am surprised that the German school system is not copied by governments around the world.

### 10.) Immediate implementation of all campaign pledges

☺️ These actions of Mr. Trump surprised everyone and should be a role model for every politician, to implement campaign pledges within four years and not to beat around the bush for four years without any substantial achievements (e.g. fiscal reforms, estate tax).

So what do we learn from Mr. Trump? The vast bulk is not recommended for imitation. But what do we learn from this? Especially in the upcoming election campaigns this year.

Best regards,  
W. ENDRICH · February 16th, 2017

# THE SMALLEST SQUARED GDT WITH A 5KA 8/20μS SURGE CAPABILITY



The SH Series Gas Discharge Tube (GDT) is designed to provide high levels of protection against fast-rising transients caused by lightning disturbances. It is offered in a squared surface mount package (5.0×5.0×4.2mm) with a 5kA surge capability and a ≤0.7pF off-state capacitance value.

## FEATURES

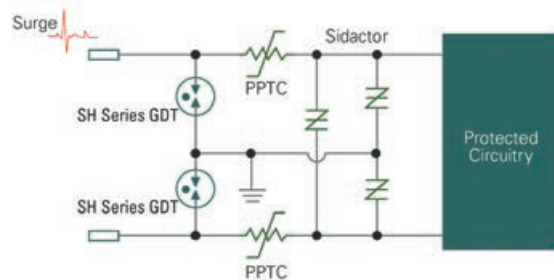
- 5 kA surge capability in minimal footprint (5.0 × 5.0 × 4.2 mm)
- Ultra-low capacitance (< 0.7 pF) that does not vary as the signal voltage varies
- Surface mount form factor with squared body and terminals

## BENEFITS

- Ideal for high surge, high-density layout applications such as radio base station power and cable modems
- Minimizes insertion losses and demodulation to be compatible with high speed, wide bandwidth applications such as G. Fast and xDSL equipment
- Simplifies the pick and place process during the automated PCB manufacturing

## APPLICATIONS

- G.Fast, xDSL, 10 GbE, and 10/100/1000 BaseT Ethernet port protection
- Satellite, CATV equipment and set top boxes
- Coaxial cable
- Ethernet, RS-485, RS-232, etc. interfaces
- Broadband equipment
- General telecom equipment
- Industrial automation
- Power Inverter/Variable Frequency Drivers (VFDs)



## ELECTRICAL CHARACTERISTICS

	PART NUMBER	DC BREAKDOWN (V)	MAX. IMPULSE BREAKDOWN (V)	MAX. IMPULSE DISCHARGE CURRENT	INSULATION RESISTANCE	CAPACITANCE	IMPULSE DISCHARGE CURRENT	AC DISCHARGE CURRENT	DC HOLDOVER VOLTAGE	IMPULSE LIFE
<b>SH75</b>	90	700			1GΩ @50V				52V	
<b>SH90</b>	108	700						52V		
<b>SH145</b>	174	700						52V		
<b>SH230</b>	276	700						80V		
<b>SH250</b>	300	700						135V		
<b>SH300</b>	360	800		6kA	1GΩ @100V	0,7pf	10 Shots @ (5kA)	15A	135V	300 Shots
<b>SH350</b>	420	900						135V		
<b>SH400</b>	480	1000						135V		
<b>SH470</b>	564	1100						150V		
<b>SH600</b>	720	1200			1GΩ @250V		1 Shot at 6kA		150V	

# 1 - 3 W POWER FILM RESISTORS – FS SERIES



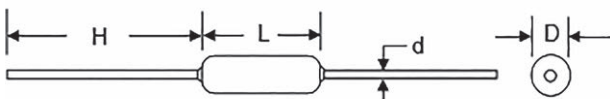
**RCD's FS Series** offers increased power rating that is achieved by a special film process and the use of high grade alumina cores. The unique structure of these materials also achieves increased working voltages and superior pulse capability compared to conventional film resistors. The low inductance inherent in resistors with film construction enables the use at high frequencies thereby fulfilling a wider range of applications compared to wirewound resistors. The FS series was designed for semi-precision and general purpose applications (1 to 5% tolerance with typical TC stability of 100 ppm). They also feature a flameproof coating as standard.

## FEATURES

- Small size, high Power resistors
- Low current noise
- Low inductance
- TCR +/- 100ppm/K typ. (50 ppm/K on request)
- High rated working voltage
- Flame proof coating
- Can replace TT's GS-3 Resistor (EOL) in some cases

## APPLICATIONS

- Power supplies
- Medical / CRT
- Audio
- Telecommunication
- Industrial controls
- Suitable to use in RC snubber circuits
- Suitable to use as inrush limiter
- Suitable to use as anti surge resistor
- Can replace carbon composition resistors in some cases



	RCD TYPE	WATTAGE	RESISTANCE RANGE $\Omega$	MAX VOLTAGE RATING	DIELECTRIC STRENGTH	$L \pm 0.8$ mm	$D \pm 0.6$ mm	$d \pm 0.08$ mm	H (MIN.) mm
<b>F1S</b>	1 W @ 70°C	0.1 to 1 M	350 V	350 V	6.35	2.3	0.6	24	
<b>F2S</b>	2 W @ 70°C	0.1 to 1 M	400 V	500 V	10.67	4.0	0.8	31.7	
<b>F3S</b>	3 W @ 70°C	0.1 to 1 M	500 V	500 V	14.7	5.08	0.8	31.7	

## HIGH TEMPERATURE SENSORS NTC THERMISTOR FOR UP TO 500°C

**SEMITEC's 500°C thermistor** is a new development. The sensor uses our NTC thermistor know-how and by changing the production process and material composition of the thermistor elements we have succeeded to further improve the sensor temperature range.

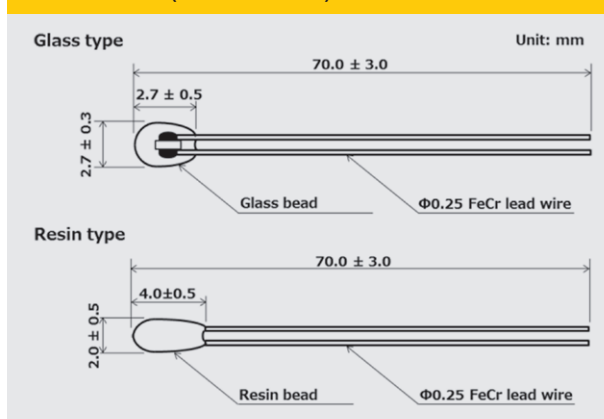
### HIGHLIGHTS

- Humidity and chemical reagent resistant glass type
- Cost effective resin type
- RoHS and ELV compliant
- Pb free glass type
- Very wide temperature range up to +500°C

### APPLICATIONS

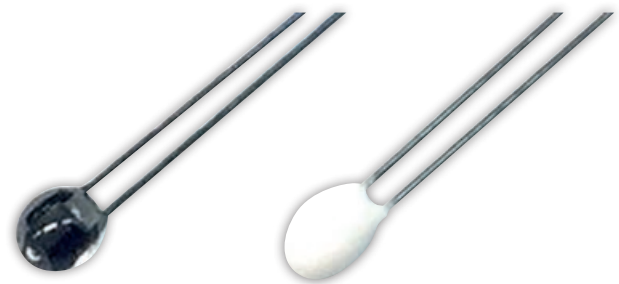
- Automotive exhaust / EGR system
- High temperature 3D printers
- Cooking appliances / Induction hob
- Medical / beauty / healthcare appliances
- Pt RTD & thermocouple replacements
- Other high temperature applications

### DIMENSIONS (PRELIMINARY)



Glass type

Resin type



ITEM

RATING

CONDITION

### CHARACTERISTICS (PRELIMINARY)

<b>Resistance: <math>R_{25}</math></b>	500 kΩ ± 3%	Resistance at 25 °C temperature
<b>Beta value: <math>B_{25/85}</math></b>	3800 K ± 2%	-
<b>Dissipation factor: <math>\delta</math></b>	1.0 to 1.5 mW/°C	25 °C (still air)
<b>Thermal time constant: <math>\tau</math></b>	15 sec max.	25 °C (still air)
<b>Operating temp. range</b>	- 40 °C to 500 °C	-
<b>Max operating temperature</b>	1000 h @ 450 °C, 50 h @ 500 °C	-
<b>Insulation resistance</b>	> 100 MΩ at DC 500 V	Between lead wire and thermistor coating

## CPT-CHUNGHWA PICTURE TUBES LTD. AUTOMOTIVE DISPLAYS



**Endrich Bauelemente Vertriebs GmbH has signed a distribution contract with TFT-manufacturer Chunghwa Picture Tubes Ltd.** (CPT). The company from Taiwan was founded in 1971 and is specialised on the production of high end industrial and automotive displays. In total 11,200 employees are responsible for the production at seven facilities world wide.

The enterprise is focused on the development of new liquid crystal technologies. It includes CPTs patented all-view technology HFFS, which is superior to the usual IPS technology in contrast ratio and response time at very low temperatures up to  $-30^{\circ}\text{C}$ . Due to the in-house production of TFT-glasses, color filters and backlights, CPT can guarantee long term availability of the displays.

The product range of the global market leader comprised sizes from 5.0" up to 27.6" which has been exhibited at the electronica show 2016 on the Endrich booth for the first time. Beside the standard formats like 4:3 and 16:9, also special formats are included in the portfolio e.g. 27.6" display with its aspect ratio of 16:3. This can be used for passenger information in trains. Next to the captivating image quality of the HFFS technology, high resolution at small size displays can be outlined, too. CPT offers already at 8" displays a higher resolution than Full-HD.

A broad linecard of standard and special sizes are available for the automotive market. Focusing on displays for interior and exterior mirrors as well as cockpits, CPT developed various special sizes. Several production facilities have been certified according to ISO/TS 16949 for automotive industry. In addition to the automotive sector where CPT is one of the top 5 manufacturers, the displays can be implemented especially in industrial applications also in smartphones and tablets for the consumer market.

### CPTS STRENGTHS:

- In-house TFT-glass, color filter and backlight production
- Extended operating temperature of  $-30^{\circ}\text{C}$  ...  $+85^{\circ}\text{C}$
- Wide viewing angle of  $89^{\circ}/89^{\circ}/89^{\circ}/89^{\circ}$  with HFFS-technology
- High contrast ratio with short response time
- Automotive TFT-production lines – certified according to ISO/TS16949
- Special sizes and shapes available



# CPT-CHUNGHWA PICTURE TUBES LTD. AUTOMOTIVE DISPLAYS

SIZE	PART NUMBER	DISPLAY RESOLUTION	BRIGHTNESS [cd/m <sup>2</sup> ]	MIN. BACKLIGHT LIFETIME [H]	INTERFACE	OPERATING TEMPERATURE [°C]	REMARKS
<b>AUTOMOTIVE TFT-DISPLAYS 4.3" - 7.0"</b>							
4.3"	043JD02	480 x 272	600	30 k	RGB	-20 ... +70	TN
5.0"	050LA0A	800 x 480	500	30 k	RGB	-20 ... +70	TN
6.1"	061LA0Q	800 x 480	500	30 k	RGB	-30 ... +85	TN
6.1"	061LA0M	800 x 480	500	30 k	RGB	-20 ... +70	TN
6.2"	062LA01	800 x 480	500	30 k	RGB	-20 ... +70	TN
6.2"	062LA11	800 x 480	500	30 k	RGB	-20 ... +70	TN
6.94"	069LR01	840 x 480	550	30 k	LVDS	-20 ... +70	TN
6.95"	069LA0A	840 x 480	500	30 k	RGB	-30 ... +85	TN
6.95"	069LA0T	840 x 480	500	30 k	RGB	-20 ... +70	TN
6.95"	069LD01	840 x 480	500	30 k	RGB	-30 ... +85	HFFS
6.95"	069NA01	1024 x 600	500	30 k	LVDS	-20 ... +70	TN
7.0"	070LD0D	800 x 480	500	30 k	RGB	-30 ... +85	TN
7.0"	070LF0B	800 x 480	450	30 k	RGB	-20 ... +70	TN
7.0"	070LFA1	800 x 480	450	30 k	RGB	-30 ... +85	TN
7.0"	070LM01	800 x 480	600	30 k	RGB	-30 ... +85	HFFS
7.0"	070LQ01	800 x 480	760	30 k	LVDS	-30 ... +85	HFFS
7.0"	070NJ05	1024 x 600	500	30 k	LVDS	-20 ... +70	TN
7.0"	070NJ07	1024 x 600	600	30 k	LVDS	-20 ... +70	TN
7.0"	070NQ08	1024 x 600	600	30 k	LVDS	-20 ... +70	HFFS



# CPT-CHUNGHWA PICTURE TUBES LTD. AUTOMOTIVE DISPLAYS

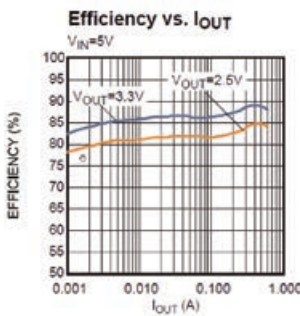
SIZE	PART NUMBER	DISPLAY RESOLUTION	BRIGHTNESS [cd/m <sup>2</sup> ]	MIN. BACKLIGHT LIFETIME [H]	INTERFACE	OPERATING TEMPERATURE [°C]	REMARKS
<b>AUTOMOTIVE TFT-DISPLAYS 8.0" - 12.3"</b>							
8.0"	080LG02	800 x 480	550	30 k	RGB	-30 ... +85	TN
8.0"	080LJ01	800 x 480	450	30 k	RGB	-20 ... +70	TN
8.0"	080LJA1	800 x 480	600	30 k	RGB	-30 ... +85	TN
8.0"	080LQ01	800 x 480	1.000	30 k	RGB	-30 ... +85	HFFS
8.0"	080NA12	1024 x 600	600	30 k	LVDS	-20 ... +70	TN
8.0"	080NA32	1024 x 600	600	30 k	LVDS	-20 ... +70	TN
8.0"	080NA23	1024 x 600	670	30 k	LVDS	-30 ... +85	TN
8.0"	080WK03	1280 x 720	600	30 k	LVDS	-30 ... +85	HFFS
8.0"	080WK05	1280 x 720	500	30 k	LVDS	-20 ... +70	HFFS
8.0"	080WK07	1280 x 720	600	30 k	LVDS	-30 ... +85	HFFS
8.0"	080WM01	1280 x 720	765	30 k	LVDS	-30 ... +85	HFFS
8.0"	080WN01	1280 x 720	550	30 k	LVDS	-30 ... +85	TN
8.0"	080WN02	1280 x 720	550	30 k	LVDS	-30 ... +85	TN
8.8"	088WA01	1280 x 800	500	30 k	LVDS	-20 ... +70	HFFS
9.0"	090LC41	800 x 480	450	30 k	RGB	-30 ... +85	TN
9.0"	090LC51	800 x 480	450	30 k	RGB	-30 ... +85	TN
9.0"	090LN01	800 x 480	500	30 k	RGB	-30 ... +85	TN
9.0"	090NA06	1024 x 600	500	30 k	LVDS	-20 ... +70	TN
9.0"	090NB16	1024 x 600	500	30 k	LVDS	-30 ... +85	TN
9.0"	090WB01	1280 x 720	500	30 k	LVDS	-30 ... +85	HFFS
9.0"	090WK05	1280 x 720	500	30 k	LVDS	-20 ... +70	HFFS
10.1"	101ND06	1024 x 600	500	30 k	LVDS	-20 ... +70	TN
10.1"	101WL01	1280 x 720	500	30 k	LVDS	-20 ... +70	TN
10.1"	101WK01	1280 x 720	600	30 k	LVDS	-30 ... +85	HFFS
10.1"	101WK05	1280 x 720	500	30 k	LVDS	-20 ... +70	HFFS
10.1"	101WM01	1280 x 720	550	30 k	LVDS	-20 ... +70	HFFS
10.2"	102NDA1	1024 x 600	600	30 k	LVDS	-30 ... +85	TN
10.3"	103WA01	1280 x 800	600	30 k	LVDS	-20 ... +70	HFFS
10.3"	103WA02	1280 x 800	700	30 k	LVDS	-30 ... +85	HFFS
10.4"	104EA01	960 x 1280	765	30 k	LVDS	-30 ... +85	HFFS
10.4"	104XA12	1024 x 768	400	30 k	LVDS	-20 ... +70	TN
11.4"	114NA13	1024 x 600	500	30 k	LVDS	-20 ... +70	TN
12.1"	121XA02	1024 x 768	600	30 k	LVDS	-30 ... +85	TN
12.3"	123PA01	1440 x 540	800	30 k	LVDS	-30 ... +85	TN
12.3"	123FBA1	1920 x 720	700	30 k	LVDS	-30 ... +85	HFFS

# ULTRA-SMALL MPM3804 (5.5 V, 0.6 A) – STEP-DOWN CONVERTER MODULE



The MPM3804 is a monolithic, step-down, switch-mode converter with built-in, internal power MOSFETs and an inductor. The MPM3804 achieves 0.6 A of continuous output current from a 2.3 V to 5.5 V input voltage range with excellent load and line regulation. The output voltage can be regulated as low as 0.6 V. Only input capacitors, output capacitors, and feedback (FB) resistors are required to complete the design. The constant-on-time (COT) control scheme provides a fast transient response, high light-load efficiency, and easy loop stabilization.

Full protection features include cycle-by-cycle current limiting and thermal shutdown. The MPM3804 is ideal for a wide range of applications, including high-performance DSPs, wireless power, portable and mobile devices, and other low-power systems. The MPM3804 requires a minimal number of readily available, standard, external components and is available in an ultra-small QFN-10 (2 mm x 2 mm) package.

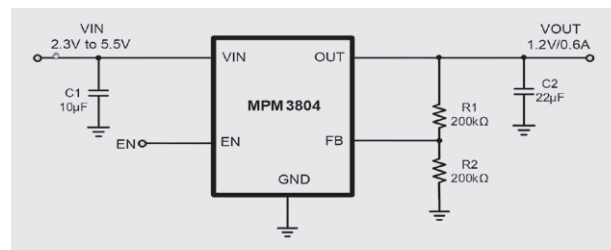


## FEATURES

- Up to 91 % Peak Efficiency
- Low IQ: 11  $\mu$ A
- Wide 2.3 V to 5.5 V Operating Input Range
- Output Voltage as Low as 0.6 V
- 100% Duty Cycle in Dropout
- 0.6 A Output Current
- 120 m $\Omega$  and 80 m $\Omega$  Internal Power MOSFETs
- 2.4 MHz Frequency
- EN and Power Good for Power Sequencing
- Cycle-by-Cycle Over-Current Protection (OCP)
- 0.5 ms Internal Soft-Start Time
- Output Discharge
- Short-Circuit Protection (SCP) with Hiccup Mode
- Thermal Shutdown
- Stable with Low ESR Output Ceramic Capacitors
- Ultra-Small 2 x 2 x 0.9 mm QFN-10 Package

## APPLICATIONS

- Optical Modules
- Industrial Products
- IOT Devices
- Space Constrained Applications
- Low-Voltage I/O Supplies
- LDO Replacement



Contact for information: Mr. Kinn · Tel.: +49(0)7452-6007-21 · e-mail: d.kinn@endrich.com

## HEADQUARTERS

ENDRICH Bauelemente Vertriebs GmbH · P.O.Box 1251 · D-72192 Nagold  
T +49 (0) 7452 6007-0 · F +49 (0) 7452 6007-70  
endrich@endrich.com · www.endrich.com

## SALES OFFICES IN EUROPE

France:  
Paris: T +33/2 41 80 19 87 · france@endrich.com

Austria & Slovenia  
Vienna: T +43/1 66 52 52 521 · austria@endrich.com

Hungary:  
Budapest: T +361 / 2 97 41 91 · hungary@endrich.com



Bulgaria:  
Sofia: T +359/2 874 30 49 · bulgaria@endrich.com

Romania:  
Timisoara: T +40/356 11 41 88 · romania@endrich.com

Switzerland – Novitronic:  
Zurich: T +41/44 306 91 91 · info@novitronic.ch

Spain:  
Barcelona: T +34/93 217 31 44 · spain@endrich.com

