



# CS410M1A

## 主要参数 MAIN CHARACTERISTICS

$I_{T(AV)}$	4A
$V_{DRM}/V_{RRM}$	600V
$I_{GT}$	1-15mA

### 用途

- 半交流开关
- 相位控制

### APPLICATIONS

- Half AC switching
- Phase control

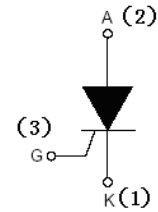
### 产品特性

- 玻璃钝化芯片，高可靠性和一致性
- 低通态电流和高浪涌电流能力
- 环保 RoHS 产品

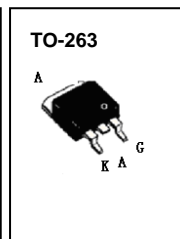
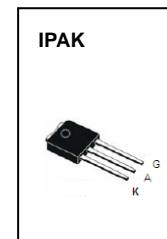
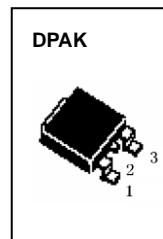
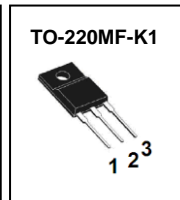
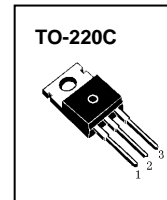
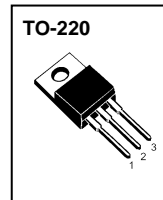
### FEATURES

- Glass-passivated mesa chip for reliability and uniform
- Low on-state voltage and High  $I_{TSM}$
- RoHS products

## 封装 Package



序号 Pin	引线名称 Description	
1	阴极	K
2	阳极	A
3	门极	G



**订货信息 ORDER MESSAGE**

订货型号 Order codes				印 记 Marking	封 装 Package
有卤-条管	无卤-条管	有卤-袋装	无卤-袋装		TO-220
Halogen-Tube	halogen-Free-Tube	Halogen- Bag	Halogen-Free-Bag		
CS410M1A-CA-B	CS410M1A-CA-BR	CS410M1A-CA-C	CS410M1A-CA-CR		
有卤-条管	无卤-条管	有卤-袋装	无卤-袋装	BT151	TO-220C
Halogen-Tube	halogen-Free-Tube	Halogen- Bag	Halogen-Free-Bag		
CS410M1A-C-B	CS410M1A-C-BR	CS410M1A-C-C	CS410M1A-C-CR		
有卤-条管	无卤-条管	有卤-袋装	无卤-袋装	BT151	TO-220MF-K1
Halogen-Tube	halogen-Free-Tube	Halogen- Bag	Halogen-Free-Bag		
CS410M1A-F1-B	CS410M1A-F1-BR	CS410M1A-F1-C	CS410M1A-F1-CR		
有卤-条管	无卤-条管	有卤-袋装	无卤-袋装	BT151	TO-263
Halogen-Tube	halogen-Free-Tube	Halogen- Bag	Halogen-Free-Bag		
CS410M1A-S-B	CS410M1A-S-BR	CS410M1A-S-C	CS410M1A-S-CR		
有卤-编带	无卤-编带	有卤-袋装	无卤-袋装	BT151	DPAK
Halogen-Reel	Halogen-Free-Reel	Halogen- Bag	Halogen-Free-Bag		
CS410M1A-R-A	CS410M1A-R-AR	CS410M1A-R-C	CS410M1A-R-CR		
有卤-条管	无卤-条管	有卤-袋装	无卤-袋装	BT151	IPAK
Halogen-Tube	halogen-Free-Tube	Halogen- Bag	Halogen-Free-Bag		
CS410M1A-V-B	CS410M1A-V-BR	CS410M1A-V-C	CS410M1A-V-CR		





## 绝对最大额定值 ABSOLUTE RATINGS (Tc=25°C)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
断态重复峰值电压 Repetitive peak off-state voltage	V <sub>DRM</sub>	600	V
反向重复峰值电压 Repetitive peak reverse voltage	V <sub>RRM</sub>	600	V
通态平均电流 Average on-state current ( half sine wave)	I <sub>T(AV)</sub>	4	A
通态方均根电流 On-state RMS current ( all conduction angles )	I <sub>T(RMS)</sub>	12	A
非重复浪涌峰值通态电流 Non- repetitive surge peak on-state current ( half sine wave ,t=10ms)	I <sub>TSM</sub>	110	A
I <sup>2</sup> t for fusing ( t=10ms)	I <sup>2</sup> t	60	A <sup>2</sup> s
门极峰值电流 Peak gate current	I <sub>GM</sub>	2	A
门极峰值电压 Peak gate voltage	V <sub>GM</sub>	5	V
反向门极峰值电压 Peak reverses gate voltage	V <sub>RGM</sub>	5	V
门极峰值功率 Peak gate power	P <sub>GM</sub>	5	W
门极平均功率 Average gate power ( over any 20ms period )	P <sub>G(AV)</sub>	0.5	W
存储温度 Storage temperature	T <sub>stg</sub>	-40~150	°C
操作结温 Operation junction temperature	T <sub>J</sub>	125	°C



静态特性 STATIC CHARACTERISTICS ( $T_c=25^\circ\text{C}$  unless otherwise stated)

项 目 Parameter	符号 Symbol	测试条件 Tests conditions	最小 min	典型 typ	最大 max	单位 Unit
断态峰值重复电流 Peak Repetitive Blocking Current	$I_{DRM}$	$V_{DM}=V_{DRM(MAX)}$ , $T_j=125^\circ\text{C}$	-	-	1.0	mA
反向峰值重复电流 Peak Repetitive Reverse Current	$I_{RRM}$	$V_{RM}=V_{RRM(MAX)}$ , $T_j=125^\circ\text{C}$	-	-	1.0	mA
峰值通态电压 Peak on-state voltage	$V_{TM}$	$I_{TM}=23\text{A}$	-	1.40	1.75	V
门极触发电流 Gate trigger current	$I_{GT}$	$V_{DM}=12\text{V}, I_T=0.1\text{A}$	1	4	15	mA
门极触发电压 Gate trigger voltage	$V_{GT}$	$V_{DM}=12\text{V}, I_T=0.1\text{A}$	-	0.8	1.5	V
维持电流 Holding current	$I_H$	$V_{DM}=12\text{V}, I_{GT}=0.1\text{A}$	-	-	25	mA
擎住电流 Latching current	$I_L$	$V_{DM}=12\text{V}, I_{GT}=0.1\text{A}$	-	-	40	mA

动态特性 DYNAMIC CHARACTERISTICS ( $T_c=25^\circ\text{C}$  unless otherwise stated)

项 目 Parameter	符号 Symbol	测试条件 Tests conditions	最小 min	典型 typ	最大 max	单位 Unit
断态临界电压上升率 Critical rate of rise of off-state voltage	dV/dt	$V_{DM}=67\% V_{DRM(MAX)}$ , $T_j=125^\circ\text{C}$	100	-	-	V/ $\mu\text{s}$

## 热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	值 value	单位 Unit
结到管壳的热 Thermal resistance junction to case	TO-220(C)\TO-263	$R_{th(j-c)}$	1.3 max
	DPAK\IPAK	$R_{th(j-c)}$	1.8 max
结到散热片的热阻 Thermal resistance junction to heatsink	TO-220MF-K1	$R_{th(j-hs)}$	4.5 max
结到环境的热阻 Thermal resistance junction to ambient ( half cycle)		$R_{th(j-a)}$	60 typ

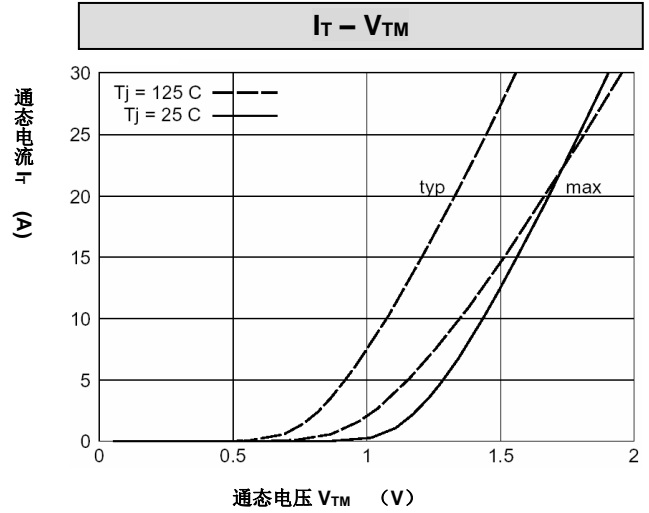
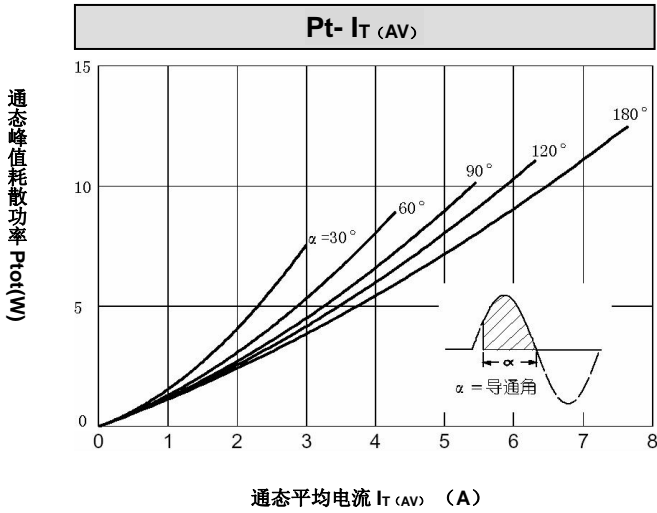
## 电绝缘特性 ELECTRICAL ISOLATION

项 目 Parameter	符号 Symbol	测试条件 Tests conditions	数值 Value	单位 Unit
绝缘电压 Isolation voltage	$V_{ISOL}$	1 minute, leads to mounting tab TO-220MF-K1	2000	V



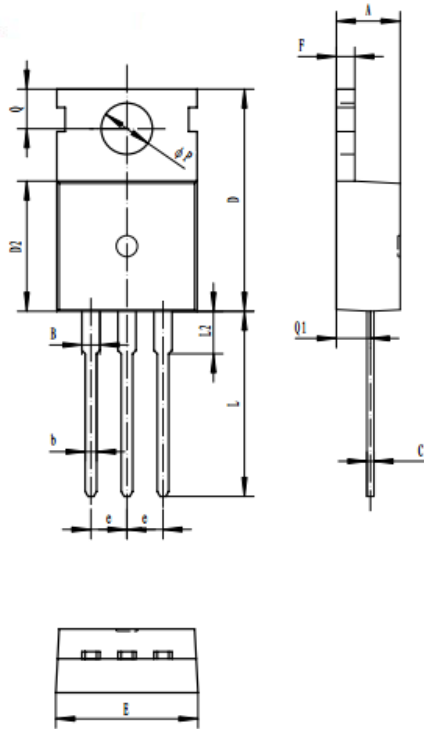


特征曲线 ELECTRICAL CHARACTERISTICS (curves)



外形尺寸 PACKAGE MECHANICAL DATA  
TO-220C

单位 Unit : mm



A	4.30-4.70
B	1.22-1.40
b	0.70-0.95
c	0.40-0.65
D	15.2-16.2
D2	9.00-9.40
E	9.70-10.10
e	2.39-2.69
F	1.25-1.40
L	12.60-13.60
L2	2.80-3.20
Q	2.60-3.00
Q1	2.20-2.60
P	3.50-3.80

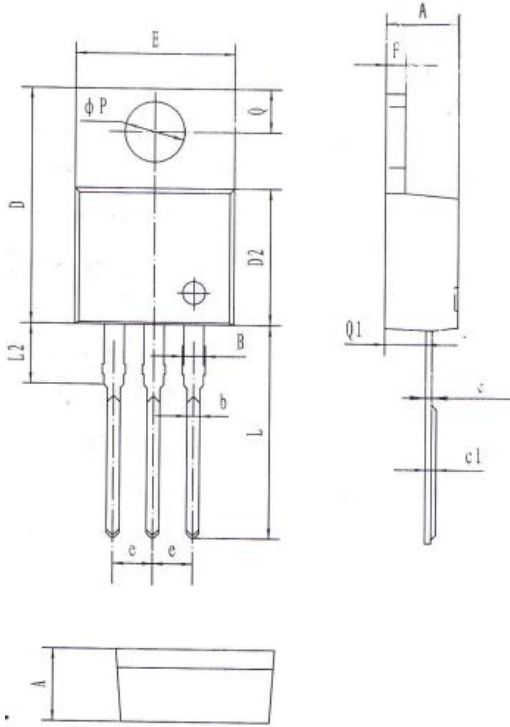




TO-220

# CS410M1A

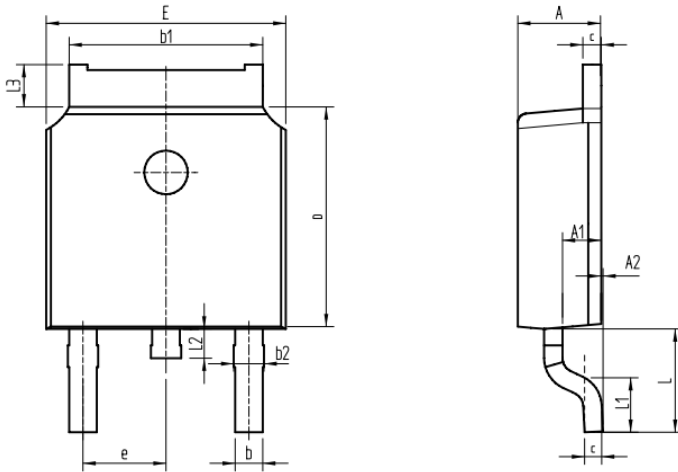
单位 Unit : mm



<b>A</b>	4.40-4.80
<b>B</b>	1.10-1.40
<b>b</b>	0.70-0.95
<b>c</b>	0.28-0.48
<b>c1</b>	0.32-0.52
<b>D</b>	14.45-16.00
<b>D2</b>	8.20-9.20
<b>E</b>	9.60-10.40
<b>e</b>	2.39-2.69
<b>F</b>	1.20-1.35
<b>L</b>	13.05-14.05
<b>L2</b>	3.70-3.90
<b>Q</b>	2.40-3.00
<b>Q1</b>	2.20-2.90
<b>P</b>	3.50-4.00

DPAK

单位 Unit : mm



<b>A</b>	2.16-2.41
<b>A1</b>	0.97-1.17
<b>A2</b>	0.00-0.15
<b>b</b>	0.63-0.93
<b>b1</b>	5.13-5.53
<b>b2</b>	0.66-0.96
<b>c</b>	0.40-0.60
<b>D</b>	5.80-6.40
<b>E</b>	6.30-6.90
<b>e</b>	2.286 BSC
<b>L</b>	2.50-3.30
<b>L1</b>	1.20-1.80
<b>L2</b>	0.60-1.00
<b>L3</b>	0.85-1.30

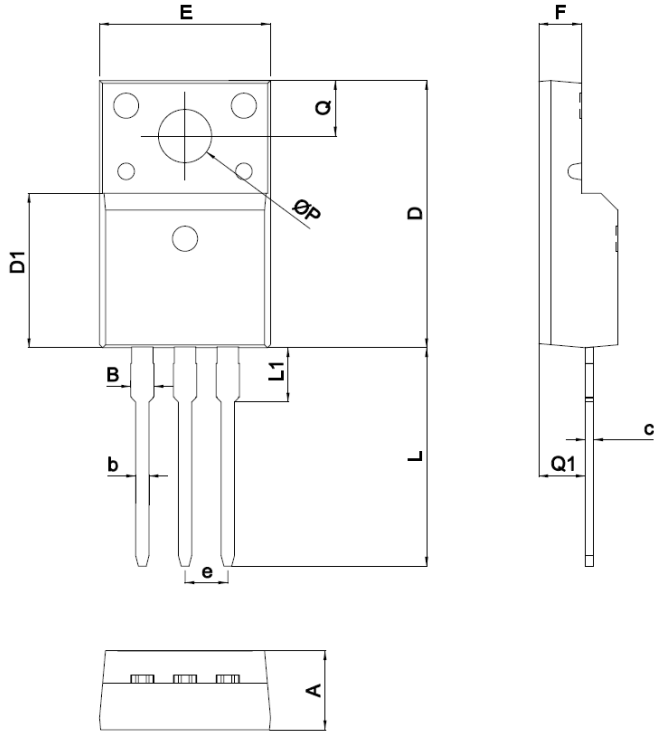




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**TO-220MF-K1**

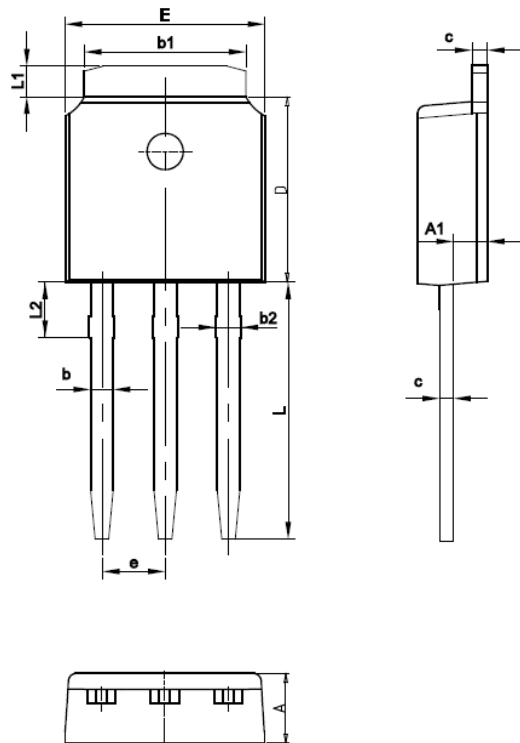
单位 Unit : mm



SYMBOL	mm	
	MIN	MAX
A	4.5	4.9
B	1.22	1.47
b	0.7	0.9
c	0.45	0.60
D	15.6	16.1
D1	9.0	9.3
e	2.54TYPE	
E	9.9	10.4
F	2.3	2.8
L	12.6	13.3
L1	3.1	3.4
Q	3.2	3.4
Q1	2.6	2.9
ΦP	3.0	3.5

**IPAK**

单位 Unit : mm



SYMBOL	MM	
	MIN	MAX
A	2.10	2.50
A1	0.87	1.27
b	0.63	0.93
b1	5.13	5.53
b2	0.67	1.00
c	0.40	0.60
D	5.80	6.40
E	6.30	6.90
L	9.10	9.70
e	2.286BSC	
L1	0.82	1.22
L2	0.90	1.20

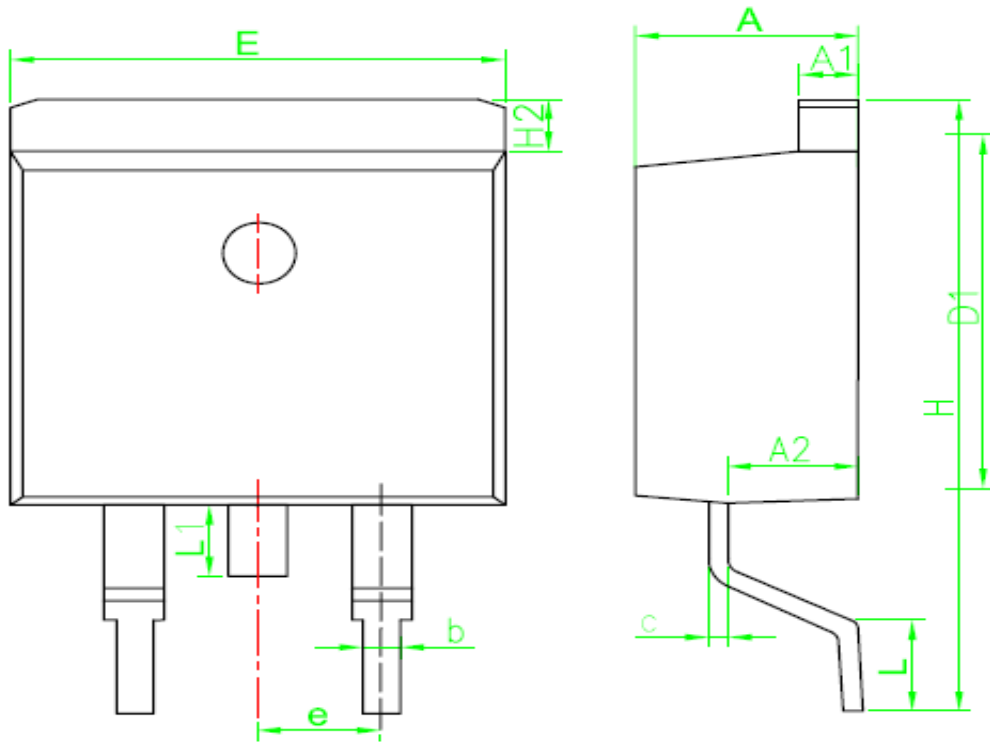




TO-263

CS410M1A

单位 Unit : mm



SYMBOL	MM	
	MIN	MAX
A	4.30	4.80
A1	1.12	1.42
A2	2.54	2.84
b	0.67	1.00
c	0.29	0.52
D1	8.40	9.00
E	9.80	10.46
e	2.54BSC	
H	14.00	16.00
H2	1.12	1.45
L	1.50	3.10
L1	1.45	1.70







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