



# JS65R540FU

## 主要参数 MAIN CHARACTERISTICS

$I_D$	7A
$V_{DSS}$	650 V
$R_{dson-max}$ (@ $V_{gs}=10V$ )	540m $\Omega$
$Q_g-typ$	16 nC

### 用途

- 高频开关电源
- 电子镇流器
- LED 电源

### 产品特性

- 低栅极电荷
- 低  $C_{rss}$  (典型值 3.9pF)
- 开关速度快
- 产品全部经过雪崩测试
- 高抗  $dv/dt$  能力
- RoHS 产品

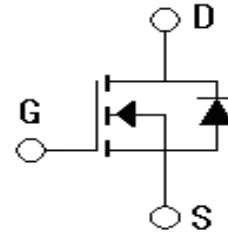
### APPLICATIONS

- High frequency switching mode power supply
- Electronic ballast
- LED power supply

### FEATURES

- Low gate charge
- Low  $C_{rss}$  (typical 3.9pF)
- Fast switching
- 100% avalanche tested
- Improved  $dv/dt$  capability
- RoHS product

### 封装 Package



## 订货信息 ORDER MESSAGE

订货型号 Order codes				印 记 Marking	封 装 Package
有卤-条管 Halogen-Tube	无卤-条管 Halogen-Free-Tube	有卤-编带 Halogen-Reel	无卤-编带 Halogen-Free-Reel		
JS65R540FU-F2-B	JS65R540FU-F2-BR	N/A	N/A	JS65R540F	TO-220MF-K2





## 绝对最大额定值 ABSOLUTE RATINGS (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value	单 位 Unit
		JS65R540FU	
最高漏极-源极直流电压 Drain-Source Voltage	V <sub>DSS</sub>	650	V
连续漏极电流 Drain Current -continuous	I <sub>D</sub> T=25℃ T=100℃	5.6*	A
		5.0*	A
最大脉冲漏极电流 (注1) Drain Current - pulse (note 1)	I <sub>DM</sub>	24*	A
最高栅源电压 Gate-Source Voltage	V <sub>GSS</sub>	±30	V
单脉冲雪崩能量 (注2) Single Pulsed Avalanche Energy (note 2)	E <sub>AS</sub>	160	mJ
雪崩电流 (注1) Avalanche Current (note 1)	I <sub>AR</sub>	4.0	A
重复雪崩能量 (注1) Repetitive Avalanche Energy (note 1)	E <sub>AR</sub>	0.4	mJ
二极管反向恢复最大电压变 化速率 (注3) Peak Diode Recovery dv/dt (note 3)	dv/dt	15	V/ns
耗散功率 Power Dissipation	P <sub>D</sub> T <sub>C</sub> =25℃ -Derate above 25℃	31.7	W
		0.25	W/℃
最高结温及存储温度 Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55~+150	℃
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T <sub>L</sub>	300	℃

\*漏极电流由最高结温限制

\*Drain current limited by maximum junction temperature





## 电特性 ELECTRICAL CHARACTERISTICS

项 目 Parameter	符 号 Symbol	测试条件 Tests conditions	最小 Min	典型 Typ	最大 Max	单 位 Units
<b>关态特性 Off –Characteristics</b>						
漏—源击穿电压 Drain-Source Voltage	$BV_{DSS}$	$I_D=250\mu A, V_{GS}=0V$	650	-	-	V
击穿电压温度特性 Breakdown Voltage Temperature Coefficient	$\Delta BV_{DSS}/\Delta T_J$	$I_D=250\mu A$ , referenced to $25^\circ C$	-	0.65	-	V/ $^\circ C$
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=650V, V_{GS}=0V,$ $T_C=25^\circ C$	-	-	10	$\mu A$
		$V_{DS}=650V, T_C=125^\circ C$	-	-	100	$\mu A$
正向栅极体漏电流 Gate-body leakage current, forward	$I_{GSSF}$	$V_{DS}=0V, V_{GS}=30V$	-	-	100	nA
反向栅极体漏电流 Gate-body leakage current, reverse	$I_{GSSR}$	$V_{DS}=0V, V_{GS}=-30V$	-	-	-100	nA
<b>通态特性 On-Characteristics</b>						
阈值电压 Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D=250\mu A$	2.5	-	4.0	V
静态导通电阻 Static Drain-Source On-Resistance	$R_{DS(ON)}$	$V_{GS} = 10V, I_D=4.0A$	-	540	620	m $\Omega$
正向跨导 Forward Transconductance	$g_{fs}$	$V_{DS} = 20V, I_D=3.5A$ (note 4)	-	5.5	-	S
<b>动态特性 Dynamic Characteristics</b>						
输入电容 Input capacitance	$C_{iss}$	$V_{DS}=50V,$ $V_{GS}=0V,$ $f=1.0MHz$	-	632	-	pF
输出电容 Output capacitance	$C_{oss}$		-	67	-	pF
反向传输电容 Reverse transfer capacitance	$C_{rss}$		-	3.9	-	pF





## 电特性 ELECTRICAL CHARACTERISTICS

开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	$t_d(\text{on})$	$V_{DD}=380V, I_D=3.5A, R_G=25\Omega,$	-	5.5	-	ns
上升时间 Turn-On rise time	$t_r$	$V_{GS}=10V$	-	3.5	-	ns
延迟时间 Turn-Off delay time	$t_d(\text{off})$	(note 4, 5)	-	55	-	ns
下降时间 Turn-Off Fall time	$t_f$		-	6.5	-	ns
栅极电荷总量 Total Gate Charge	$Q_g$	$V_{DS}=520V,$	-	16	26	nC
栅-源电荷 Gate-Source charge	$Q_{gs}$	$I_D=7.0A$	-	3.6	-	nC
栅-漏电荷 Gate-Drain charge	$Q_{gd}$	$V_{GS}=10V$ (note 4, 5)	-	6.8	-	nC
栅电阻 Intrinsic gate resistance	$R_G$	$f=1\text{ MHz open drain}$	-	2.0	-	$\Omega$
漏-源二极管特性及最大额定值 Drain-Source Diode Characteristics and Maximum Ratings						
正向最大连续电流 Maximum Continuous Drain -Source Diode Forward Current		$TC=25^\circ C$	-	-	6.3	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current		$TC=25^\circ C$	-	-	19	A
正向压降 Drain-Source Diode Forward Voltage	$V_{SD}$	$V_{GS}=0V, I_S=7.0A$	-	0.9	1.2	V
反向恢复时间 Reverse recovery time	$t_{rr}$	$V_{GS}=0V, I_F=I_S$	-	250	-	ns
反向恢复电荷 Reverse recovery charge	$Q_{rr}$	$di/dt=100A/\mu s$ (note 4)	-	2.2	-	$\mu C$

## 热特性 THERMAL CHARACTERISTIC

项 目 Parameter	符 号 Symbol	最大 Max	单 位 Unit
		JS65R540FU	
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	3.96	$^\circ C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	80	$^\circ C/W$

注释:

- 1: 脉冲宽度由最高结温限制
- 2:  $V_{GS}=10V, V_{DD}=50V, R_G=25\Omega$ , 起始结温  $T_J=25^\circ C$
- 3:  $I_{SD}\leq 7A, di/dt\leq 300A/\mu s, V_{DD}\leq BV_{DSS}$ , 起始结温  $T_J=25^\circ C$
- 4: 脉冲测试: 脉冲宽度 $\leq 300\mu s$ , 占空比 $\leq 2\%$
- 5: 基本与工作温度无关

Notes:

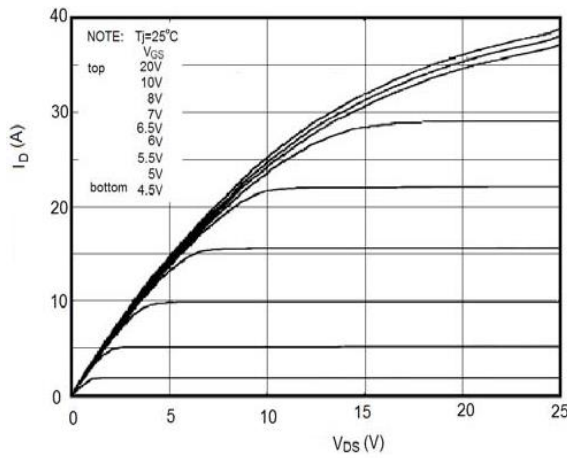
- 1: Pulse width limited by maximum junction temperature
- 2:  $V_{GS}=10V, V_{DD}=50V, R_G=25\Omega$ , Starting  $T_J=25^\circ C$
- 3:  $I_{SD}\leq 7A, di/dt\leq 300A/\mu s, V_{DD}\leq BV_{DSS}$ , Starting  $T_J=25^\circ C$
- 4: Pulse Test: Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2\%$
- 5: Essentially independent of operating temperature



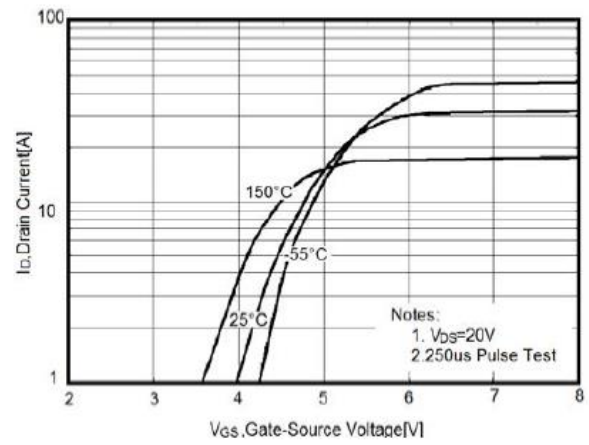


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

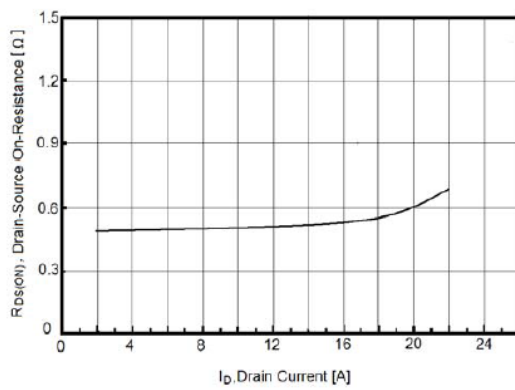
On-Region Characteristics



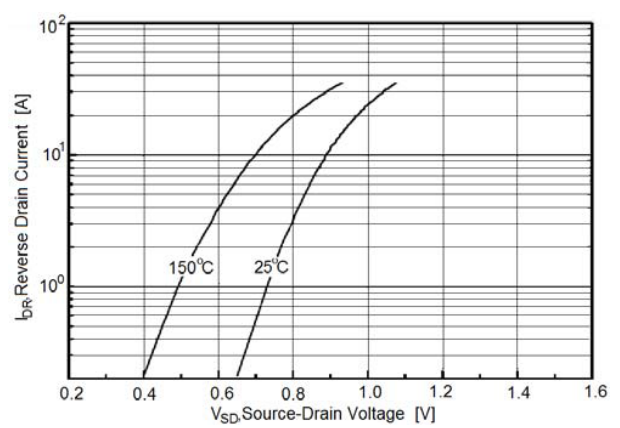
Transfer Characteristics



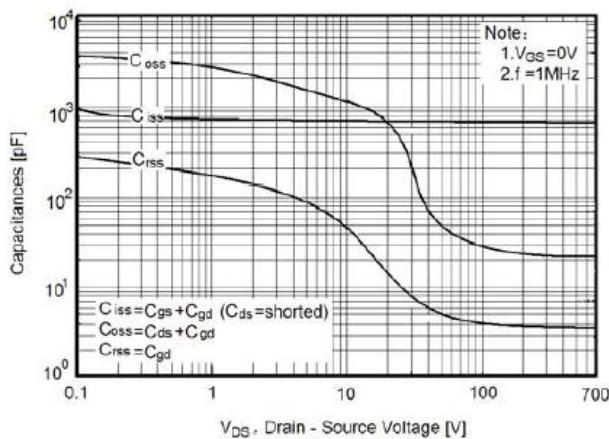
On-Resistance Variation vs. Drain Current



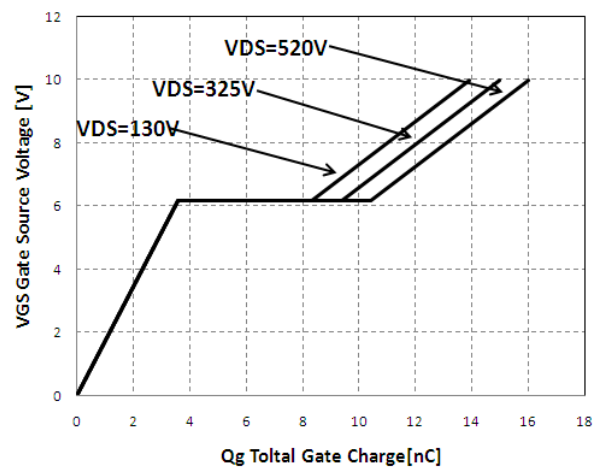
Body Diode Forward Voltage Variation vs. Source Current and Temperature



Capacitance Characteristics



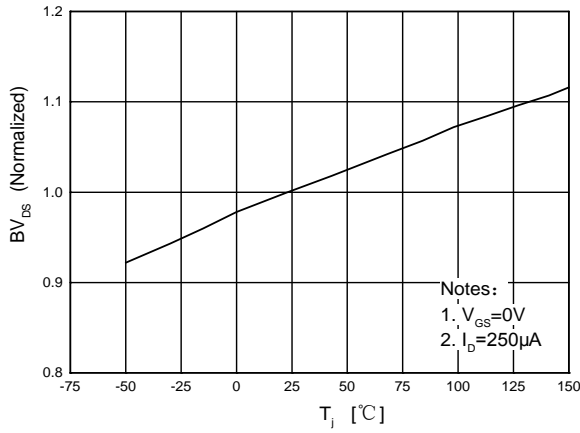
Gate Charge Characteristics



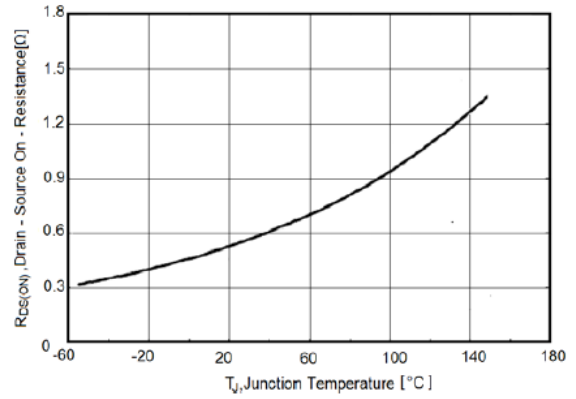


特征曲线 ELECTRICAL CHARACTERISTICS (curves)

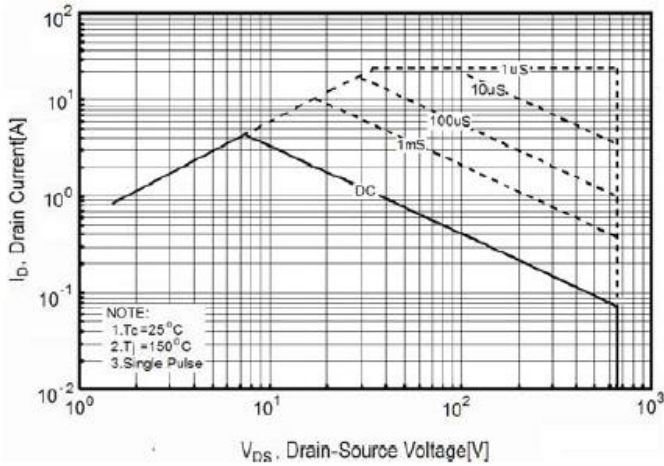
Breakdown Voltage Variation vs. Temperature



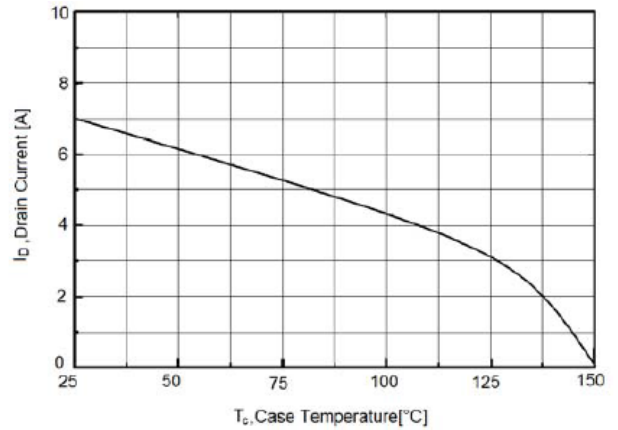
On-Resistance Variation vs. Temperature



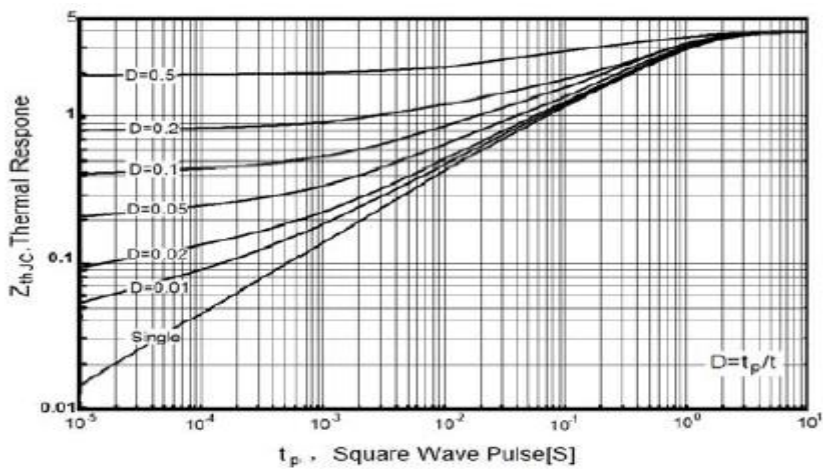
Maximum Safe Operating Area For JS65R540FU



Maximum Drain Current vs. Case Temperature



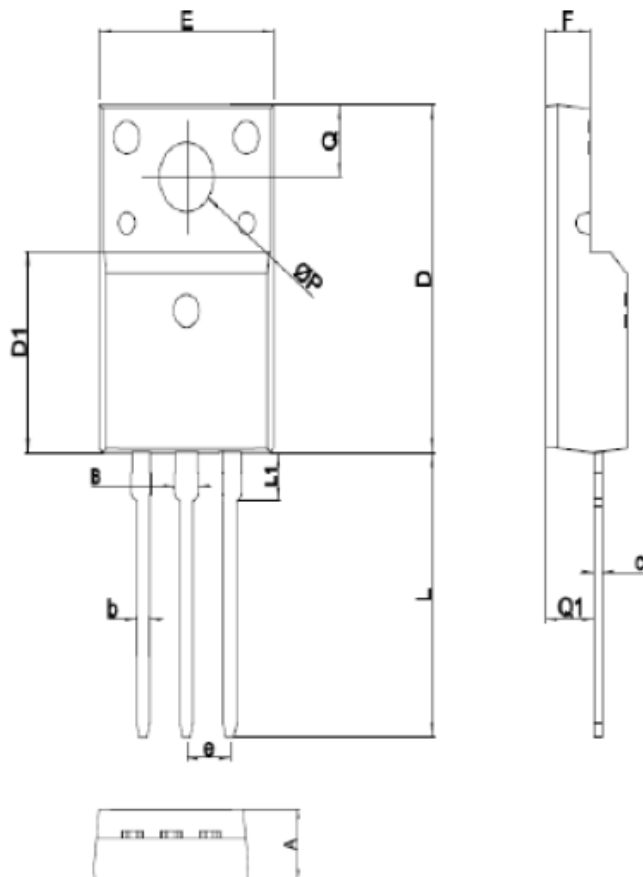
Transient Thermal Response Curve





## TO-220MF-K2

单位 Unit: mm



SYMBOL	mm	
	MIN	MAX
A	4.5	4.9
B		1.27
b	0.59	0.79
c	0.45	0.60
D	15.67	16.07
D1	8.97	9.37
e	2.54TYPE	
E	9.96	10.36
F	2.34	2.74
L	12.65	13.35
L1	1.80	2.20
Q	3.2	3.4
Q1	2.56	2.96
ΦP	3.08	3.28







## 附录 (Appendix) : 修订记录 (Revision History)

日期 Date	旧版本 Last Rev.	新版本 New Rev.	修订内容 Description of Changes
2017-3-18		201703A.	新拟制

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