

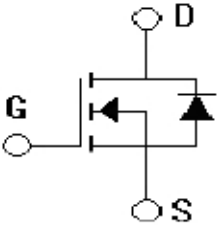


6R2D2

主要参数

Main Characteristics

I_D	165 A
V_{DS}	60 V
$R_{DS(on)-typ}$	2.2 mΩ
Q_g-typ	71.5 nC



用途

DC/DC转换器
高频开关电源和
同步整流
无刷直流电机

Applications

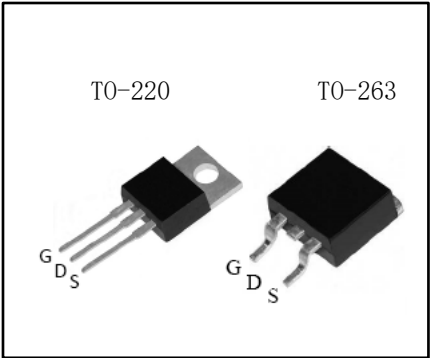
DC/DC Converter
High-frequency switching and synchronous
rectification
BLDC

产品特性

专有的新型沟槽技术
快速开关和高效率
低的导通电阻

Features

Proprietary New Trench Technology
Fast Switching and High efficiency
Low on-resistance



绝对最大额定值 **Absolute Ratings** (Tc=25℃)

项 目 Parameter	符 号 Symbol	数 值 Value	单位 Unit
最高漏极—源极直流电压 Drain-Source Voltage	V _{DSS}	60	V
连续漏极电流 Drain Current -continuous	I _D	165	A
最大脉冲漏极电流 Drain Current – pulse	I _{DM}	660	A
最高栅源电压 Gate-Source Voltage	V _{GSS}	±20	V
单脉冲雪崩能量, L=1mH Single Pulsed Avalanche Energy	E _{AS}	850	mJ
二极管反向恢复最大电压变化速率 Peak Diode Recovery dv/dt	dv/dt	5.0	V/ns
耗散功率 Power Dissipation	P _D	260	W
最高结温 Operating Junction Temperature	T _J	+150	℃
存储温度 Storage Temperature Range	T _{STG}	-55~+150	℃
引线最高焊接温度 Maximum Lead Temperature for Soldering Purposes	T _L	300	℃

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

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
关态特性 Off –Characteristics						
漏—源击穿电压 Drain-Source Voltage	BV _{DSS}	I _D =250μA, V _{GS} =0V	60	-	-	V
零栅压下漏极漏电流 Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V, T _C =25℃	—	-	1	μA
		V _{DS} =48V, V _{GS} =0V, T _C =125℃	—	-	100	μA
正向栅极体漏电流 Forward Gate-body leakage current	I _{GSSF}	V _{DS} =0V, V _{GS} =+20V	-	-	100	nA
反向栅极体漏电流 Reverse Gate-body leakage current	I _{GSSR}	V _{DS} =0V, V _{GS} =-20V	-	-	-100	nA
通态特性 On-Characteristics						
阈值电压 Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	2.0	-	4.0	V
静态导通电阻（注 4） Static Drain-Source On-Resistance （note 4）	R _{DS(ON)}	V _{GS} =10V , I _D =50A	-	2.2	2.6	mΩ
动态特性 Dynamic Characteristics						
输入电容 Input capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V f=1.0MHz	-	4687	-	pF
输出电容 Output capacitance	C _{oss}		-	2678	-	pF
反向传输电容 Reverse transfer capacitance	C _{rss}		-	59	-	pF
开关特性 Switching Characteristics						
延迟时间 Turn-On delay time	t _{d(on)}	V _{DD} =30V I _D =50A R _G =2.5Ω V _{GS} =10V	-	25.9	-	ns
上升时间 Turn-On rise time	t _r		-	12.9	-	ns
延迟时间 Turn-Off delay time	t _{d(off)}		-	38.6	-	ns
下降时间 Turn-Off Fall time	t _f		-	13.1	-	ns
栅极电荷总量 Total Gate Charge	Q _g	V _{DD} =30V ,I _D =50A, V _{GS} =10V	-	71.5	-	nC
栅—源电荷 Gate-Source charge	Q _{gs}		-	21	-	nC
栅—漏电荷 Gate-Drain charge	Q _{gd}		-	18	-	nC

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	I_{SD}		-	-	165	A
正向最大脉冲电流 Maximum Pulsed Drain-Source Diode Forward Current	I_{SM}		-	-	660	A
正向压降 Drain-Source Diode Forward	V_{FSD}	$V_{GS}=0V, I_S=40A$	-	-	1.2	V
反向恢复时间 Reverse recovery time	t_{rr}	$V_{GS}=0V, I_S=50A$ $dI_F/dt=100A/\mu s$	-	87	-	ns
反向恢复电荷 Reverse recovery charge	Q_{rr}		-	128	-	nC

热特性 Thermal Characteristics

项 目 Parameter	符 号 Symbol	最大 Max	单 位 Unit
结到管壳的热阻 Thermal Resistance, Junction to Case	$R_{th(j-c)}$	0.48	$^{\circ}C/W$
结到环境的热阻 Thermal Resistance, Junction to Ambient	$R_{th(j-A)}$	62	$^{\circ}C/W$

注释:

1 $T_J=+25^{\circ}C$ to $+150^{\circ}C$

2 Repetitive rating: pulse width limited by maximum junction temperature

3 Pulse width $\leq 380\mu s$; duty cycle $\leq 2\%$.

特性曲线 Typical Characteristics

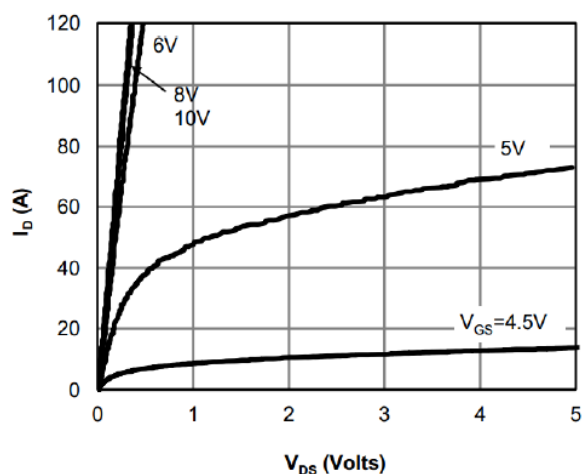


Figure 1: On Region Characteristics

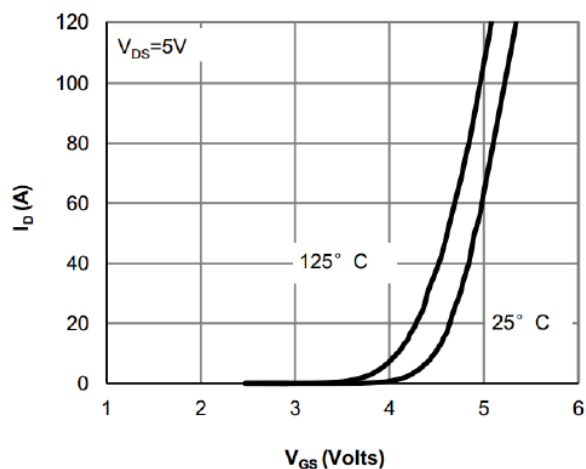


Figure 2: Transfer Characteristics

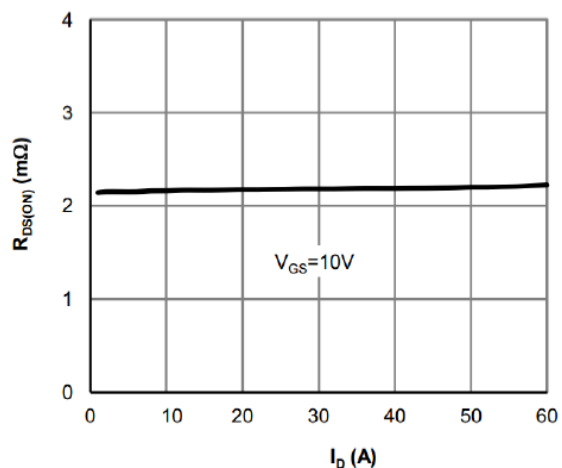


Figure 3: On-Resistance vs. Drain Current and Gate Voltage

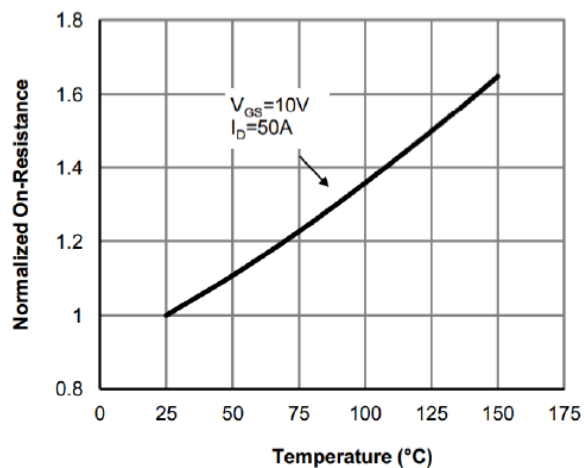


Figure 4: On-Resistance vs. Junction Temperature

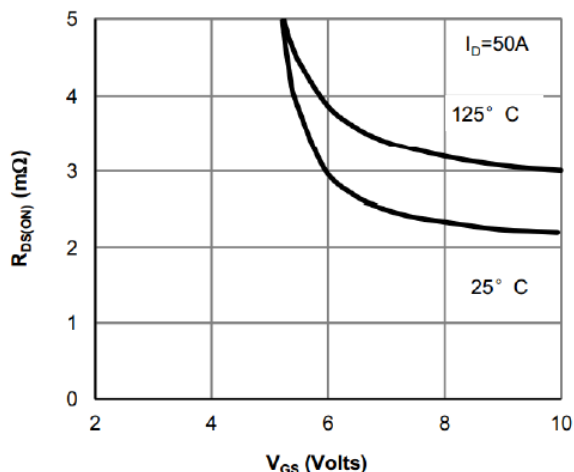


Figure 5: On-Resistance vs. Gate-Source Voltage

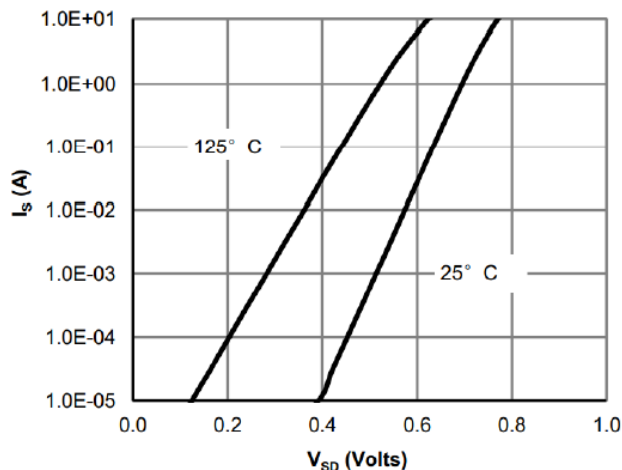


Figure 6: Body-Diode Characteristics

特性曲线 Typical Characteristics

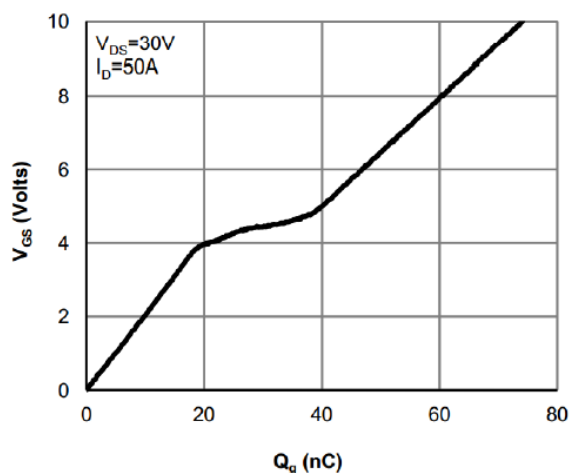


Figure 7: Gate-Charge Characteristics

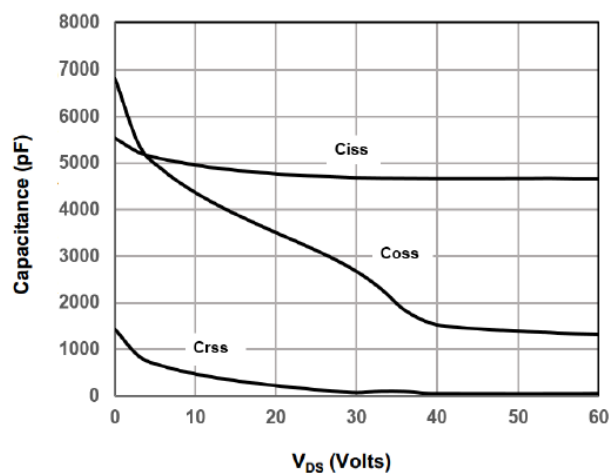


Figure 8: Capacitance Characteristics

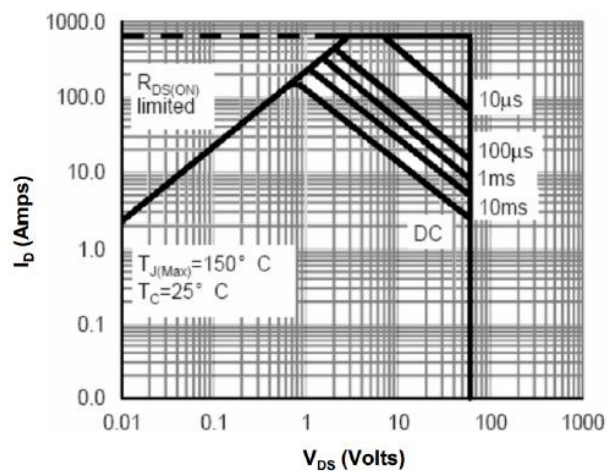
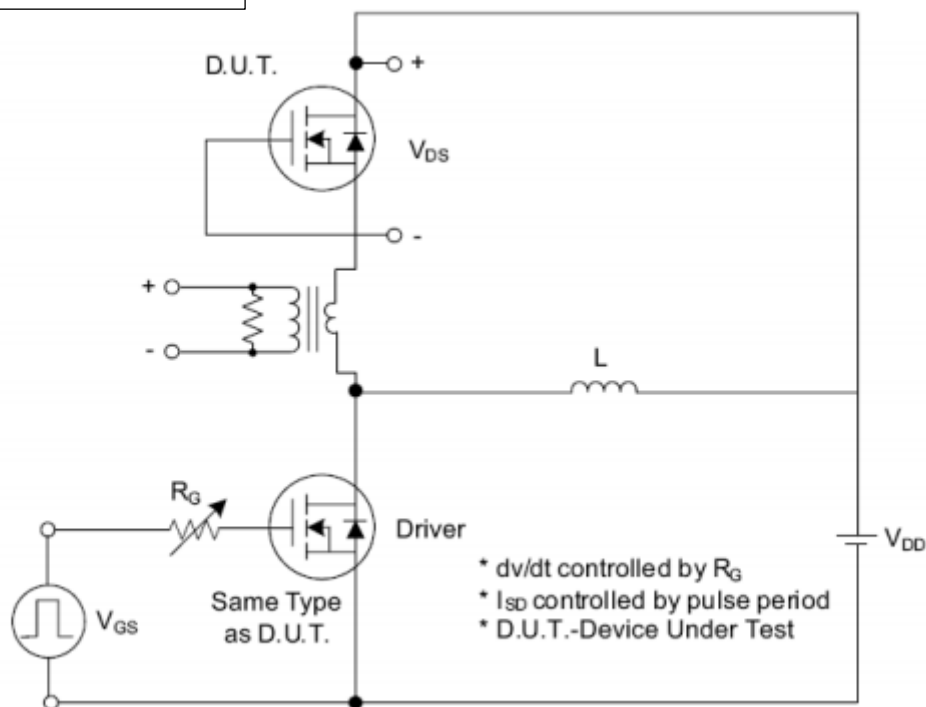
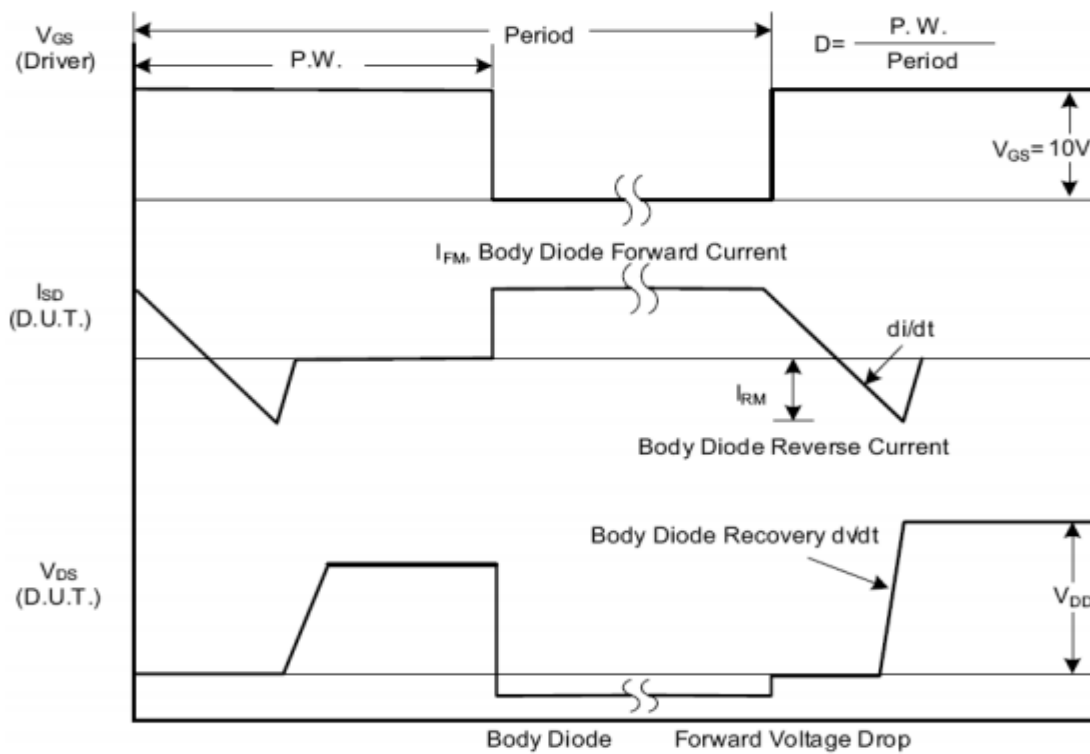


Figure 9: Maximum Forward Biased Safe Operating Area

TEST Circuits and Waveforms

Fig. 1.1 Peak Diode Recovery dv/dt Test CircuitFig. 1.2 Peak Diode Recovery dv/dt Waveforms

TEST Circuits and Waveforms

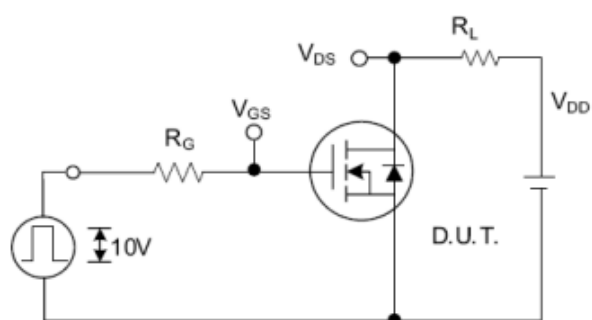


Fig. 2.1 Switching Test Circuit

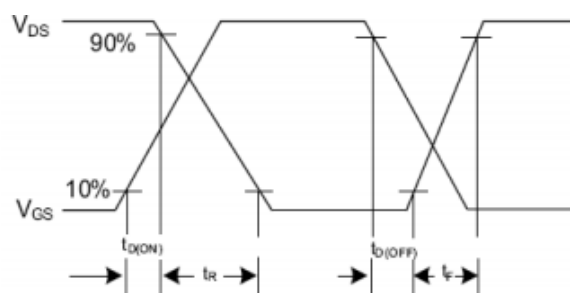


Fig. 2.2 Switching Waveforms

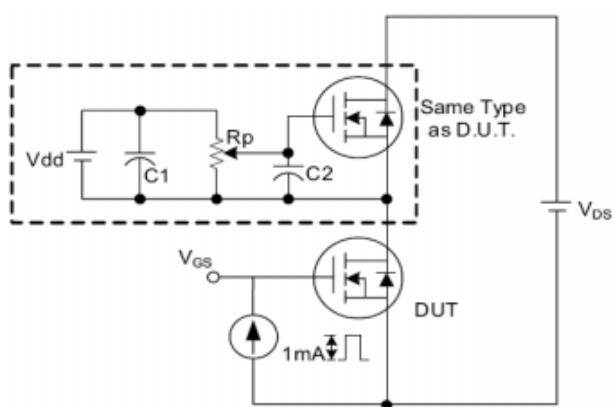


Fig. 3.1 Gate Charge Test Circuit

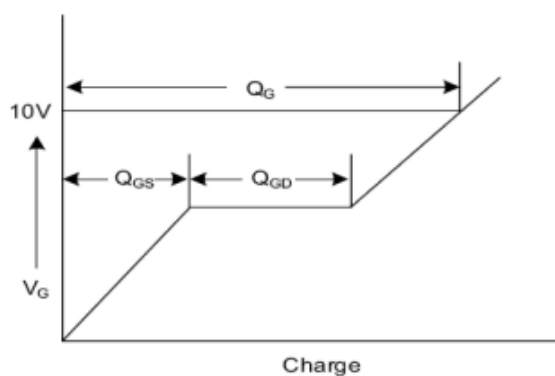


Fig. 3.2 Gate Charge Waveform

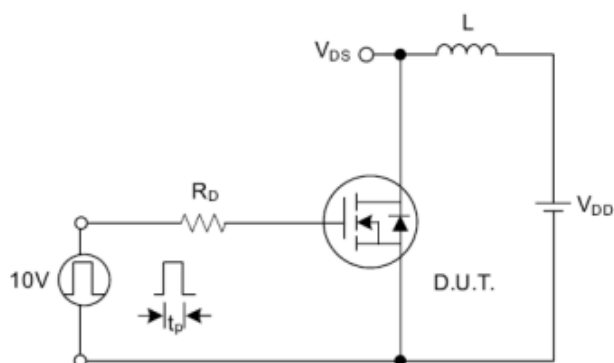


Fig. 4.1 Unclamped Inductive Switching Test Circuit

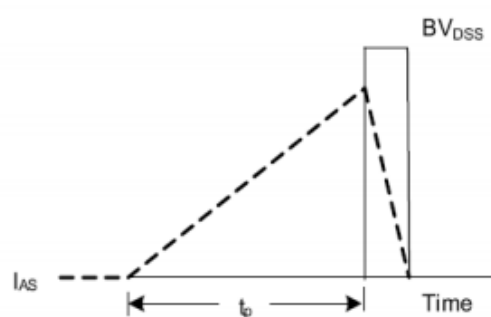


Fig. 4.2 Unclamped Inductive Switching Waveforms

