

◆ Features:

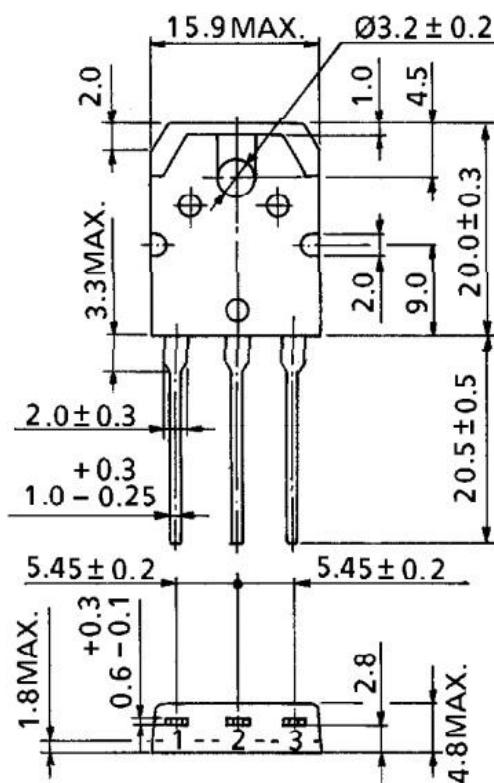
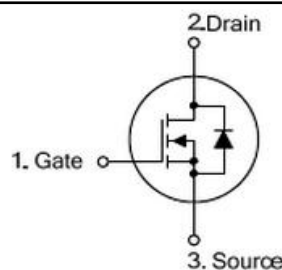
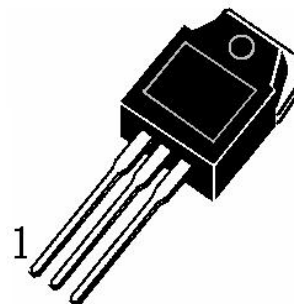
- ✧ Fast switching speed
开关速度快
- ✧ High input impedance and low level drive
高输入阻抗和低电平驱动
- ✧ Avalanche energy tested
雪崩能量测试
- ✧ Improved dv/dt capability, high ruggedness
提高 dv/dt 能力, 高耐用性

◆ Applications

- ✧ High efficiency switch mode power supplies
高效率开关电源
- ✧ Power factor correction
功率因数校正
- ✧ Electronic lamp ballast
电子整流器



TO-3PN



◆ Absolute Maximum Ratings (Tc=25°C)

Symbol	Parameters	Ratings	Unit
V _{DSS}	Drain-Source Voltage 漏源电压	500	V
V _{GS}	Gate-Source Voltage-Continuous 栅源电压	±30	V
I _D	Drain Current-Continuous (Note 2) 漏极持续电流	14	A
I _{DM}	Drain Current-Single Plused (Note 1) 漏极单次脉冲电流	56	A
P _D	Power Dissipation (Note 2) 功率损耗	190	W
T _j	Max.Operating junction temperature 最大结温	150	°C

◆ Electrical characteristics (Tc=25°C unless otherwise noted)

Symbo l	Parameters	Min	Typ	Max	Units	Conditions
Static Characteristics						
B _V DSS	Drain-Source Breakdown VoltageCurrent (Note 1) 漏极击穿电压	500	--	--	mA	I _D =250μA, V _{GS} =0V, T _J =25°C
V _{GS(th)}	Gate Threshold Voltage 栅极开启电压	2.0	--	4.0	V	V _{DS} =V _{GS} , I _D =250μA
R _{DS(on)}	Drain-Source On-Resistance 漏源导通电阻	--	0.45	0.8	Ω	V _{GS} =10V, I _D =6.5A
I _{GSS}	Gate-Body Leakage Current 栅极漏电流	--	--	±100	nA	V _{GS} =±30V, V _{DS} =0
I _{DSS}	Zero Gate Voltage Drain Current 零栅极电压漏极电流	--	--	1	μA	V _{DS} =500V, V _{GS} =0
g _{fs}	Forward Transconductance 正向跨导	3.8	--	--	S	V _{DS} =15V, I _D =5A

Switching Characteristics						
T _{d (on)}	Turn-On Delay Time 开启延迟时间	--	25	60	ns	V _{DS} =250V, I _D =14A, R _G =25Ω（Note 2）
T _r	Rise Time 上升时间	--	100	210	ns	
T _{d (off)}	Turn-Off Delay Time 关闭延迟时间	--	130	270	ns	
T _f	Fall Time 下降时间	--	100	210	ns	
Q _g	Total Gate Charge 栅极总电荷	--	43	56	nC	V _{DS} =400V ， V _{GS} =10V, I _D =14A（Note 2）
Q _{gs}	Gate-Source Charge 栅源极电荷	--	7.5	--	nC	
Q _{gd}	Gate-Drain Charge 栅漏极电荷	--	18.5	--	nC	
Dynamic Characteristics						
C _{iss}	Input Capacitance 输入电容	--	1580	2055	pF	V _{DS} =25V, V _{GS} =0, f=1MHz
C _{oss}	Output Capacitance 输出电容	--	180	235	pF	
C _{rss}	Reverse Transfer Capacitance 反向传输电容	--	20	25	pF	
I _S	Continuous Drain-Source Diode Forward Current（Note 2） 二极管导通正向持续电流	--	--	13	A	
V _{SD}	Diode Forward On-Voltage 二极管正向导通电压	--	--	1.4	V	I _S =14A, V _{GS} =0
R _{th(j-c)}	Thermal Resistance, Junction to Case 结到外壳的热阻	--	--	0.65	℃/W	

Note 1: Repetitive Rating : Pulse width limited by maximum junction temperature

Note 2: Pulse test: $PW \leq 300\mu s$, duty cycle $\leq 2\%$.

◆ Ratings and Characteristic curves

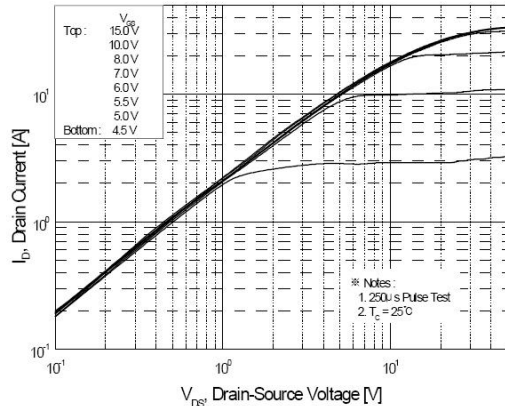


Figure 1. On-Region Characteristics

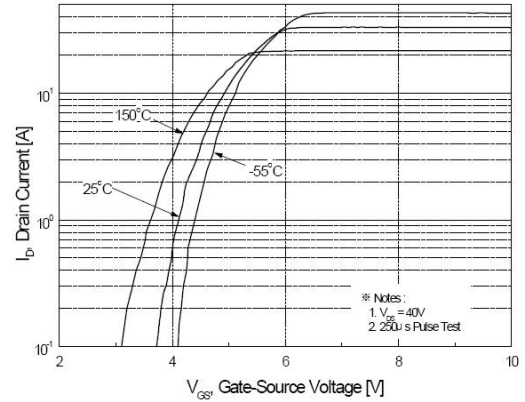


Figure 2. Transfer Characteristics

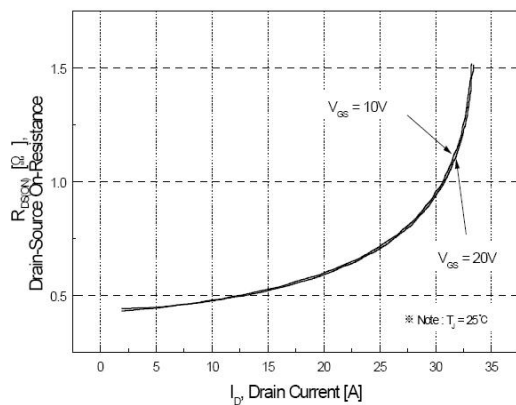


Figure 3. On-Resistance Variation vs Drain Current and Gate Voltage

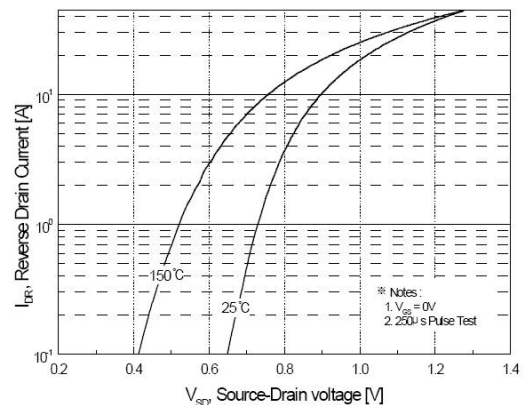


Figure 4. Body Diode Forward Voltage Variation with Source Current and Temperature

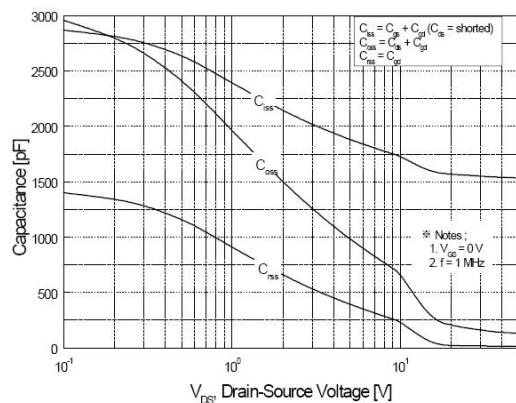


Figure 5. Capacitance Characteristics

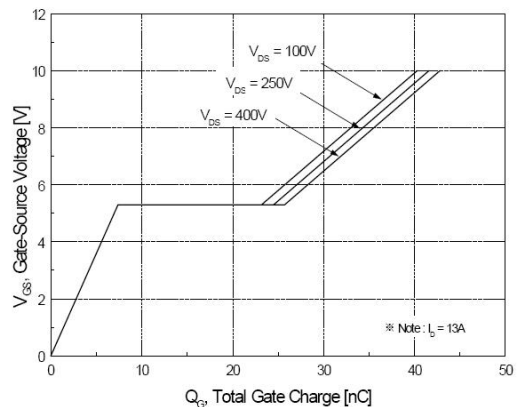


Figure 6. Gate Charge Characteristics

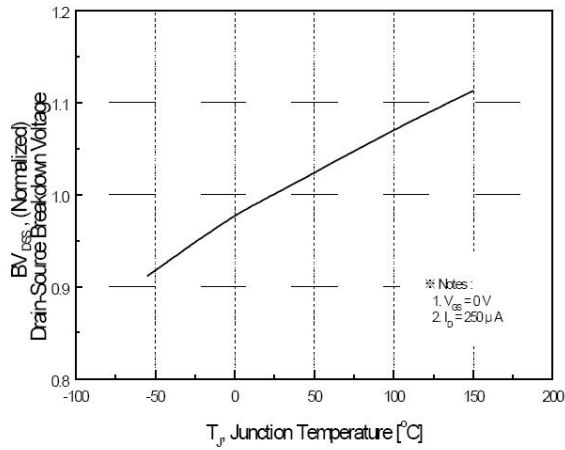


Figure 7. Breakdown Voltage Variation vs Temperature

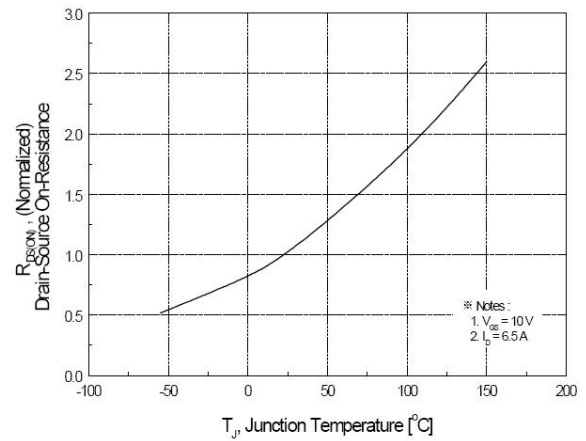


Figure 8. On-Resistance Variation vs Temperature

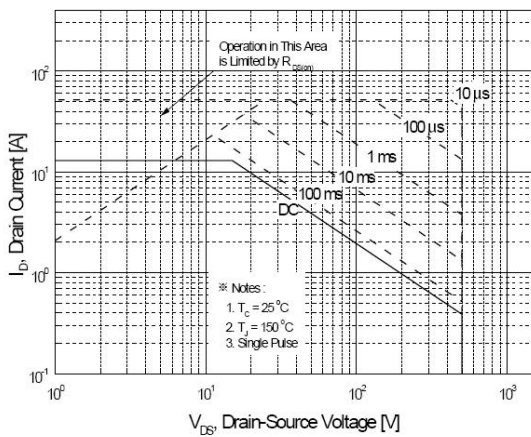


Figure 9. Maximum Safe Operating Area

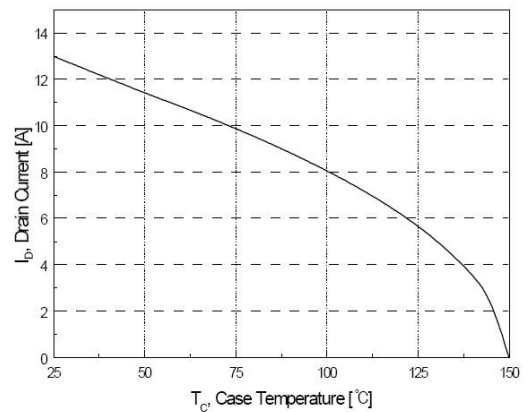


Figure 10. Maximum Drain Current vs Case Temperature

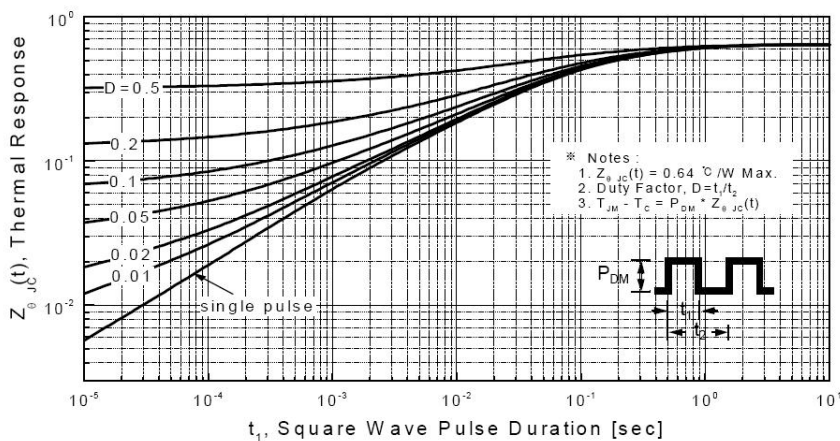


Figure 11. Transient Thermal Response Curve

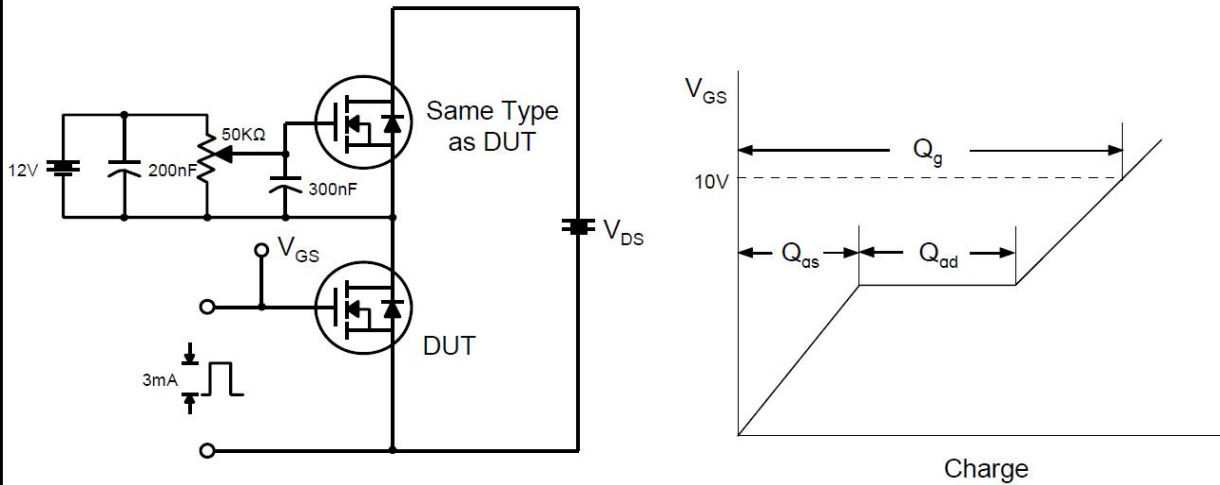
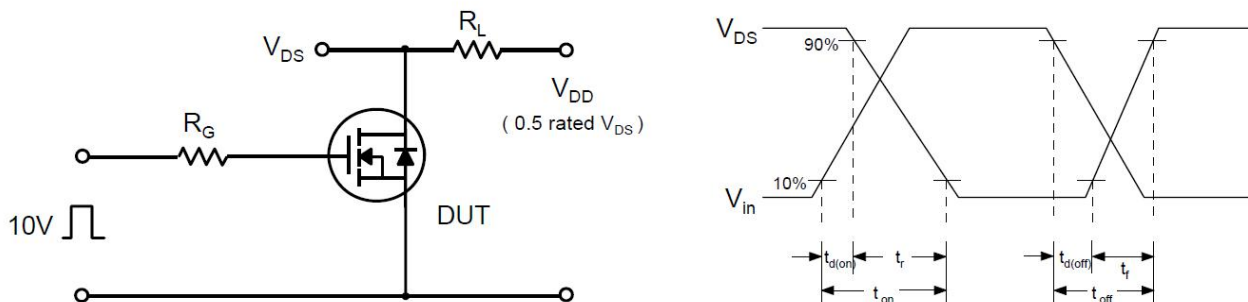
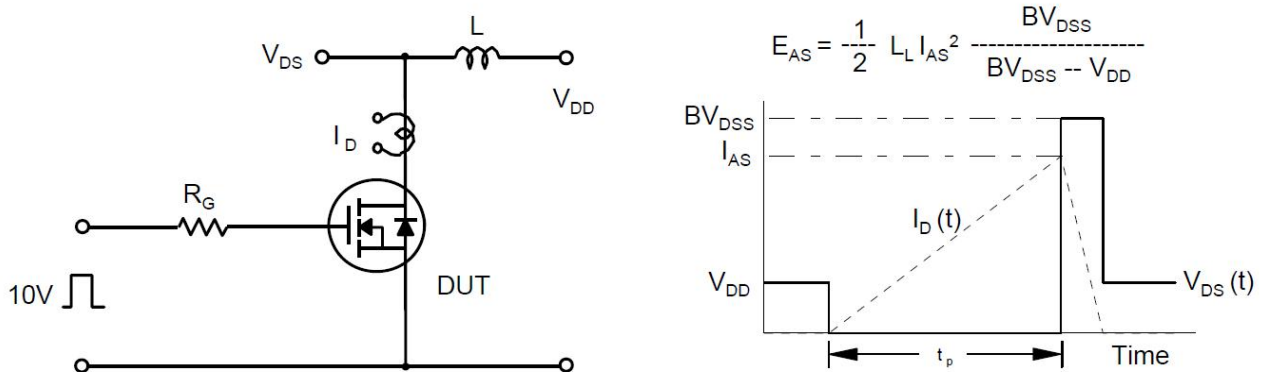
Fig 12. Gate Charge Test Circuit & Waveform

Fig 13. Resistive Switching Test Circuit & Waveforms

Fig 14. Unclamped Inductive Switching Test Circuit & Waveforms


Fig 15. Peak Diode Recovery dv/dt Test Circuit & Waveforms
