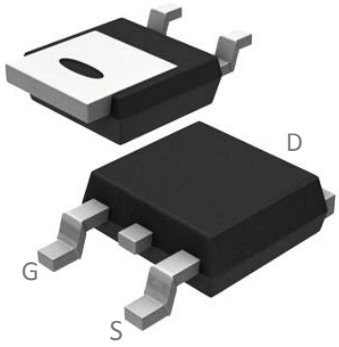
IRFR5305

P-Channel 60 V (D-S) MOSFET

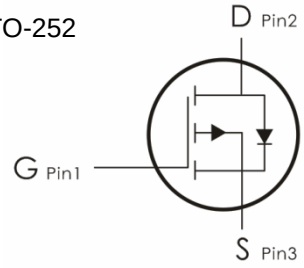
Description：

This P-Channel MOSFET uses advanced trench technology and design to provide excellent $R_{DS(on)}$ with low gate charge.

It can be used in a wide variety of applications.



TO-252



Features：

1) V_{DS}=-60V,I_D=-30A,$R_{DS(ON)}$<35mΩ @V_{GS}=-10V
2) Low gate charge.
3) Green device available.
4) Advanced high cell denity trench technology for ultra $R_{DS(ON)}$.
5) Excellent package for good heat dissipation.

Absolute Maximum Ratings： (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	-60	V
V_{GS}	Gate-Source Voltage	±20	V
I_D	Continuous Drain Current	-30	A
	Continuous Drain Current-TC=100℃	-19	
	Pulsed Drain Current[1]	---	
E_{AS}	Single Pulse Avalanche Energy	225	mJ
P_D	Power Dissipation	50	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +175	℃

Thermal Characteristics：

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance,Junction to Case	3	℃/W
$R_{\theta JA}$	Thermal Resistance,Junction to Ambient	42	

Electrical Characteristics: (T_C=25℃ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Sourtce Breakdown Voltage	V_{GS}=0V,I_D=250μA	-60	---	---	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{GS}=0V, V_{DS}=-60V	---	---	-1	μA
I_{GSS}	Gate-Source Leakage Current	V_{GS}=±20V, V_{DS}=0A	---	---	±100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage	V_{GS}=V_{DS}, I_D=250μA	-1	-1.8	-2.5	V
$R_{DS(ON)}$	Drain-Source On Resistance②	V_{GS}=-10V,I_D=-15A	---	26	35	mΩ
		V_{GS}=-4.5V,I_D=-10A	---	32	40	
G_{FS}	Forward Transconductance	V_{DS} =-10V, I_D=-15A	---	---	---	S
Dynamic Characteristics						
C_{iss}	Input Capacitance	V_{DS}=-30V, V_{GS}=0V, f=1MHz	---	2535	---	pF
C_{oss}	Output Capacitance		---	130		
C_{rss}	Reverse Transfer Capacitance		---	75		
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time	V_{DD}=-30V, I_D=-10A, R_{GEN}=6.8Ω, V_{GS}=-10V	---	14	---	ns
t_r	Rise Time		---	18	---	ns
$t_{d(off)}$	Turn-Off Delay Time		---	42	---	ns
t_f	Fall Time		---	15	---	ns
Q_g	Total Gate Charge	V_{GS}=-10V, V_{DS}=-30V, I_D=-10A	---	46	---	nC
Q_{gs}	Gate-Source Charge		---	11	---	nC
Q_{gd}	Gate-Drain “Miller” Charge		---	10	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage	V_{GS}=0V,I_S=-15A, T_J=25℃	---	-0.88	-1.2	V

t_{rr}	Reverse Recovery Time	I_{SD}=-20A,V_{GS}=0V	---	28	---	ns
Q_{rr}	Reverse Recovery Charge	.dI/dt=-500A/μs	---	165	---	nc

Notes:

1. Repetitive rating; pulse width limited by max. junction temperature.
2. Pulse width≦ 300μs; duty cycle≦2%.
3 . Limited by TJmax, starting TJ = 25¡ãC, L = 0.5mH,RG = 25Ω， , IAS = -32A, VGS =-10V. Part not recommended for use above this value

Typical Characteristics: (T_C=25℃ unless otherwise noted)

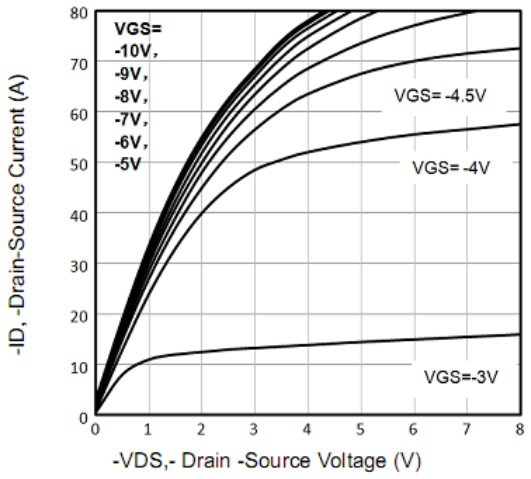


Fig1. Typical Output Characteristics

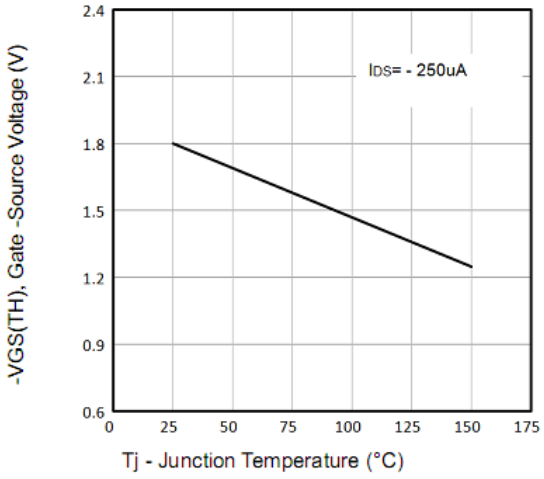


Fig2. -VGS(TH) Gate -Source Voltage Vs.Tj

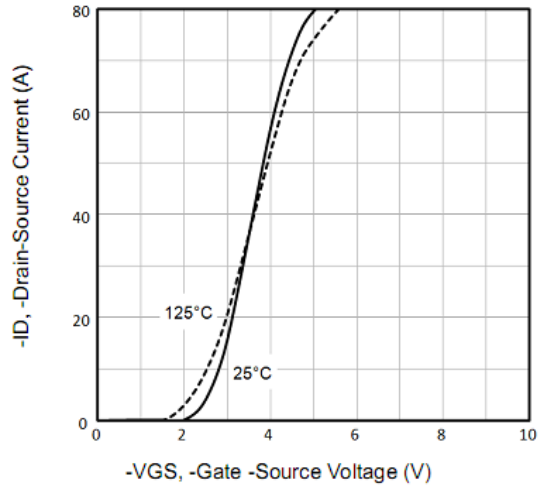


Fig3. Typical Transfer Characteristics

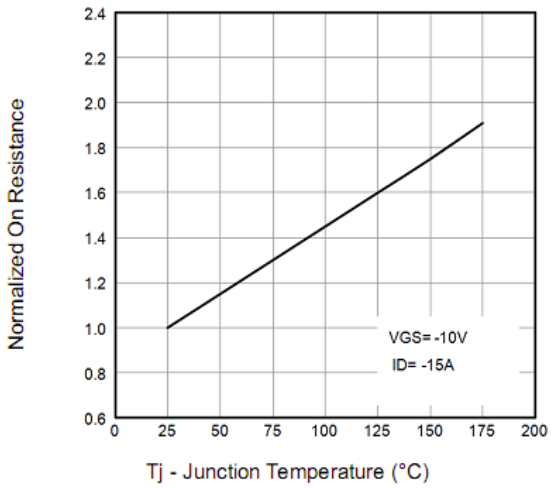


Fig4. Normalized On-Resistance Vs. Tj

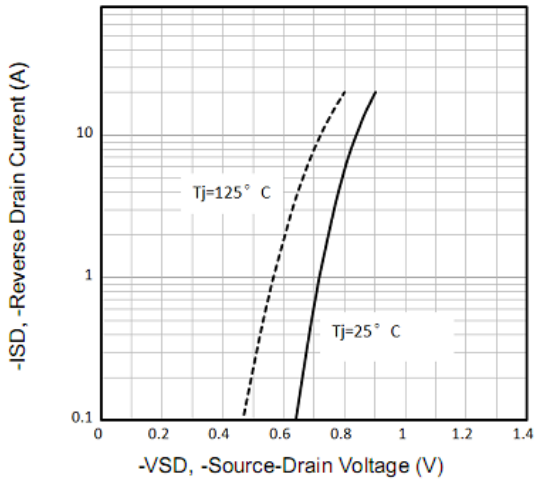


Fig5. Typical Source-Drain Diode Forward Voltage

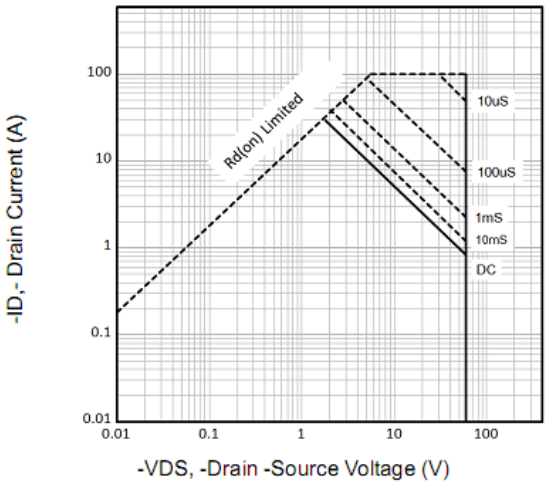


Fig6. Maximum Safe Operating Area

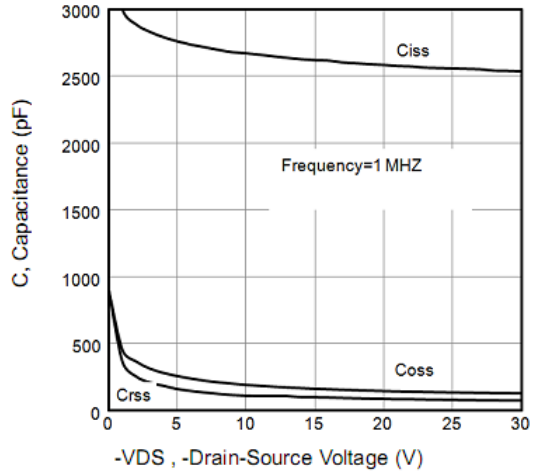


Fig7. Typical Capacitance Vs.Drain-Source Voltage

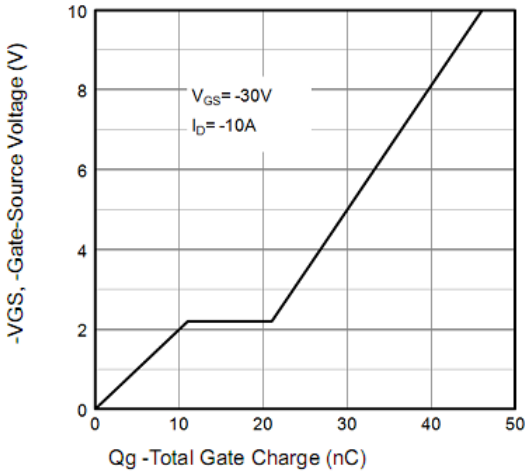


Fig8. Typical Gate Charge Vs.Gate-Source Voltage

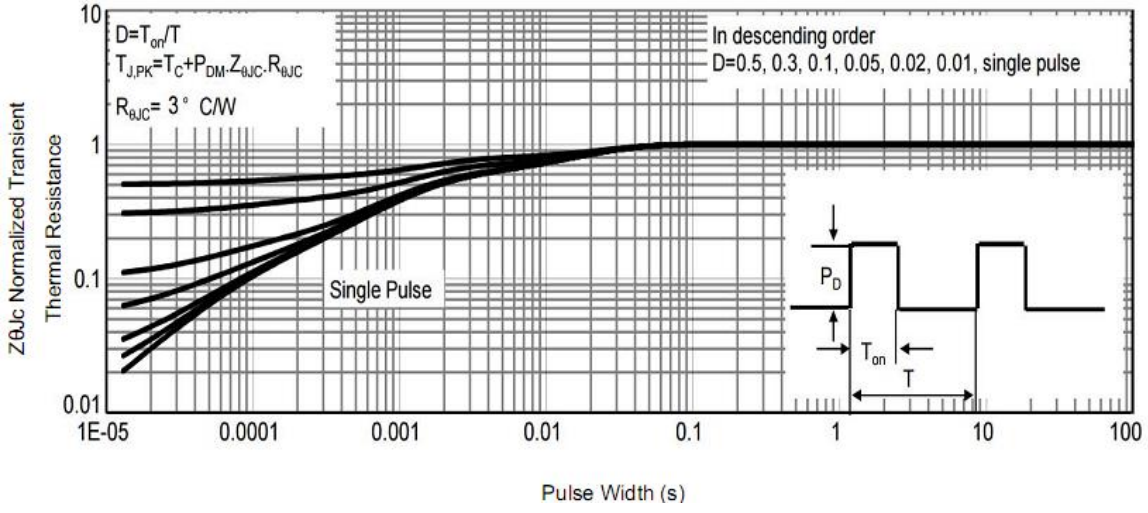


Fig9. Normalized Maximum Transient Thermal Impedance

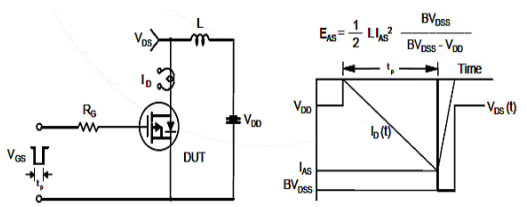


Fig10. Unclamped Inductive Test Circuit and Waveforms

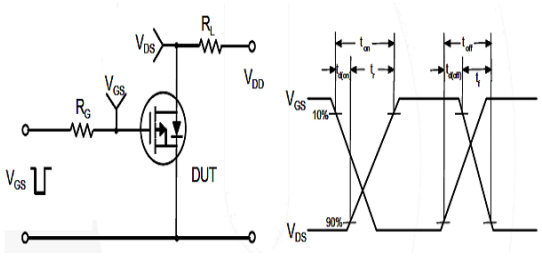
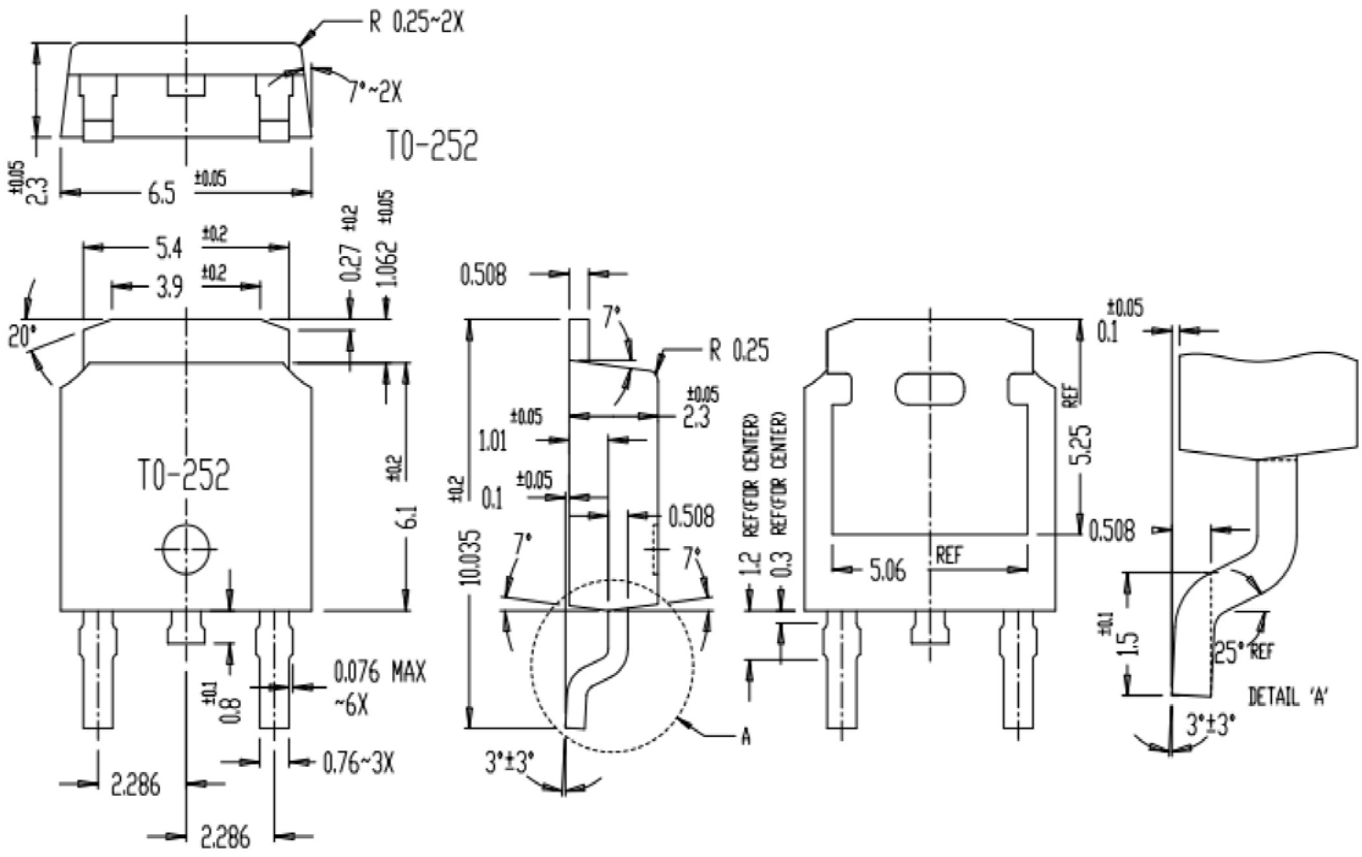


Fig11. Switching Time Test Circuit and waveforms

外形尺寸图 / Package Dimensions



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