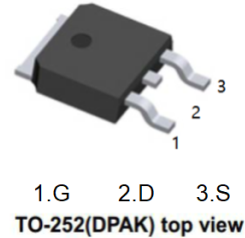


**-60 V P-Channel Enhancement Mode MOSFET**

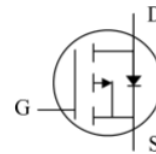
**DESCRIPTION**

The IRFR5305TR uses advanced trench technology to provide excellent  $R_{DS(ON)}$  and low gate charge. This device is suitable for use as a load switch or in PWM applications.



**GENERAL FEATURES**

- $V_{DS} = -60V, I_D = -30A$
- $R_{DS(ON)} < 40m\Omega @ V_{GS} = -10V$
- $R_{DS(ON)} < 55m\Omega @ V_{GS} = -4.5V$
- High Power and current handling capability
- Lead free product is acquired
- Surface Mount Package



**Application**

- PWM applications
- Load switch
- Power management

**ABSOLUTE MAXIMUM RATINGS(TA=25°C unless otherwise noted)**

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V <sub>DS</sub>	-60	V
Gate-Source Voltage	V <sub>GS</sub>	±20	V
Drain Current-Continuous@ Current-Pulsed (Note 1)	I <sub>D</sub> (25°C)	-30	A
	I <sub>D</sub> (70°C)	-20	A
	I <sub>DM</sub>	-60	A
Maximum Power Dissipation	P <sub>D</sub>	60	W
Operating Junction and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 To 175	°C
Thermal Resistance, Junction-to-Ambient (Note 2)	R <sub>θJA</sub>	25	°C/W

**-60 V P-Channel Enhancement Mode MOSFET**
**ELECTRICAL CHARACTERISTICS (TA=25 °C unless otherwise noted)**

Parameter	Symbol	Condition	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	BV <sub>DSS</sub>	V <sub>GS</sub> =0V, I <sub>D</sub> =-250μA	-60			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-48V, V <sub>GS</sub> =0V			-1	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±20V, V <sub>DS</sub> =0V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =-250μA	-1.1	-2	-3	V
Drain-Source On-State Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-10V, I <sub>D</sub> =-20A		31	40	mΩ
		V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-20A		42	55	mΩ
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =-5V, I <sub>D</sub> =-20A	5			S
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =0V, F=1.0MHz		3060		PF
Output Capacitance	C <sub>oss</sub>			300		PF
Reverse Transfer Capacitance	C <sub>rss</sub>			205		PF
Turn-on Delay Time	t <sub>d(on)</sub>	V <sub>DS</sub> =-30V, V <sub>GS</sub> =-10V, R <sub>GEN</sub> =3Ω I <sub>D</sub> =1A		14		nS
Turn-on Rise Time	t <sub>r</sub>			20		nS
Turn-Off Delay Time	t <sub>d(off)</sub>			40		nS
Turn-Off Fall Time	t <sub>f</sub>			19		nS
Total Gate Charge	Q <sub>g</sub>				48	
Gate-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =-30V, I <sub>D</sub> =-20A, V <sub>GS</sub> =-10V		11		nC
Gate-Drain Charge	Q <sub>gd</sub>			10		nC
Body Diode Reverse Recovery Time	T <sub>rr</sub>	I <sub>F</sub> =-20A, dI/dt=100A/μs		40		nS
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>			56		nC
Diode Forward Voltage (Note 3)	V <sub>SD</sub>	V <sub>GS</sub> =0V, I <sub>S</sub> =-1A		-0.72	-1	V

**NOTES:**

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on 1in<sup>2</sup> FR4 Board, t ≤ 10 sec.
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%.
4. Guaranteed by design, not subject to production testing.

TYPICAL ELECTRICAL AND THERMAL CHARACTERISTICS

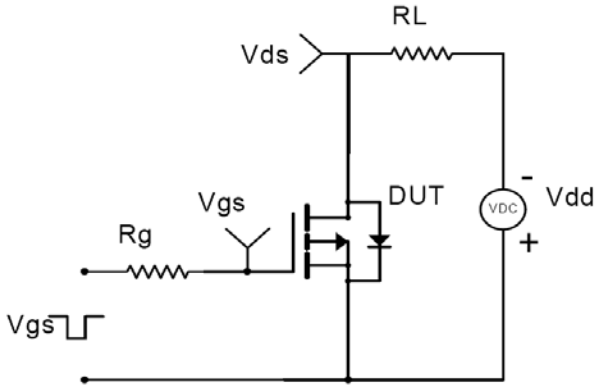


Figure 1: Switching Test Circuit

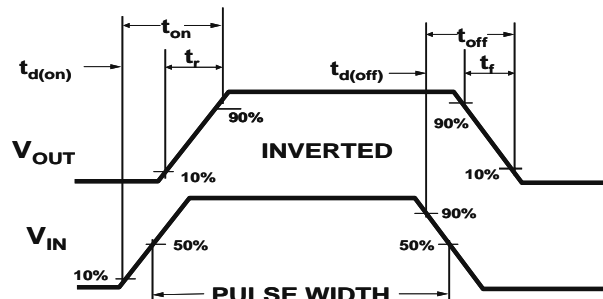


Figure 2: Switching Waveforms

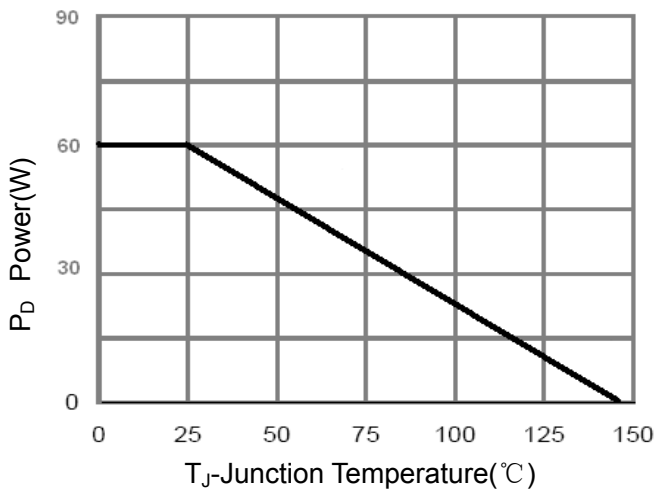


Figure 3 Power Dissipation

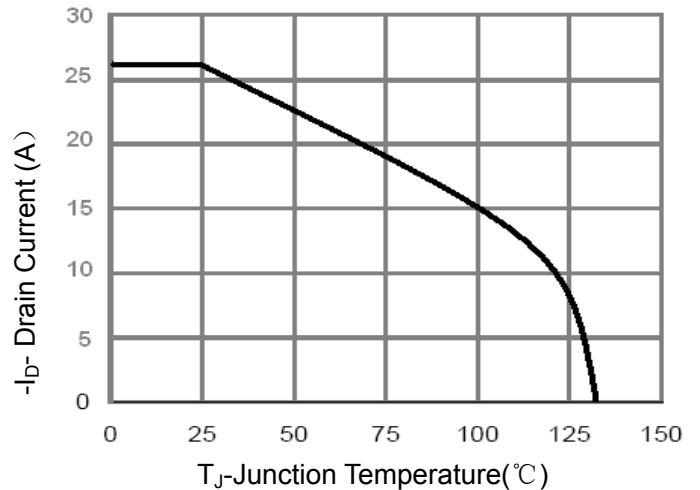


Figure 4 Drain Current

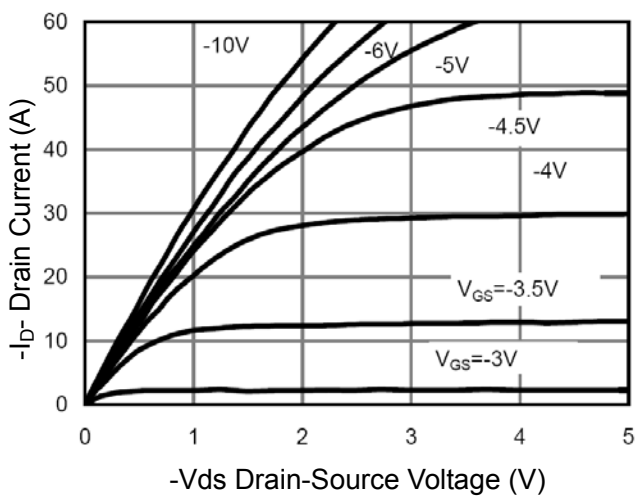


Figure 5 Output CHARACTERISTICS

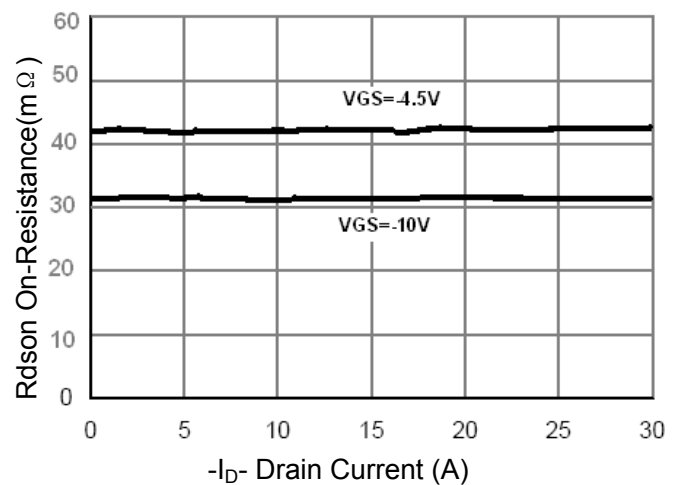


Figure 6 Drain-Source On-Resistance

-60 V P-Channel Enhancement Mode MOSFET

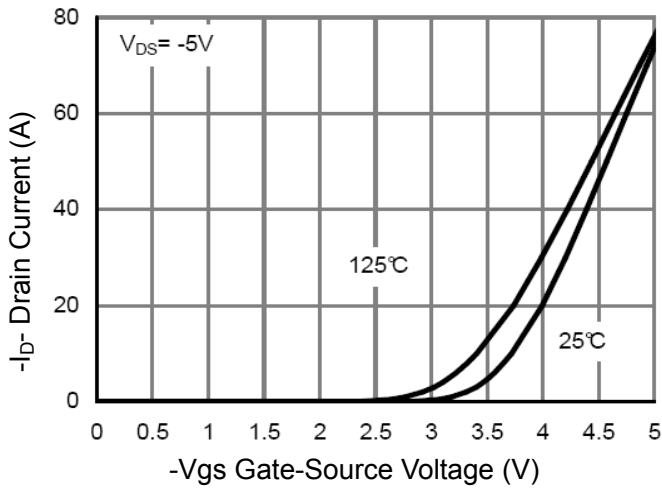


Figure 7 Transfer Characteristics

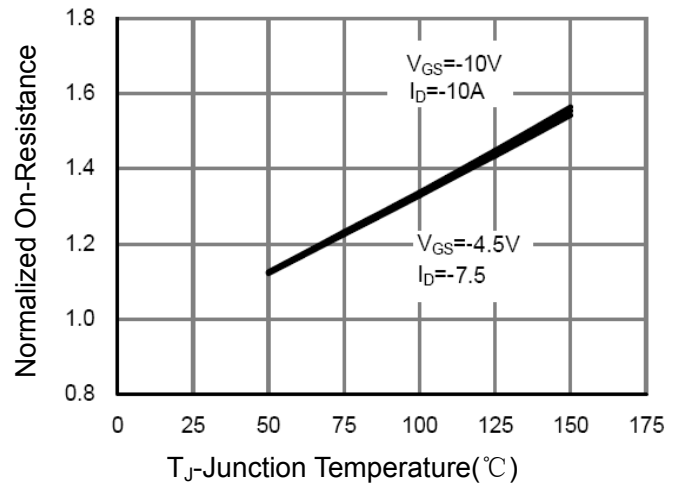


Figure 8 Drain-Source On-Resistance

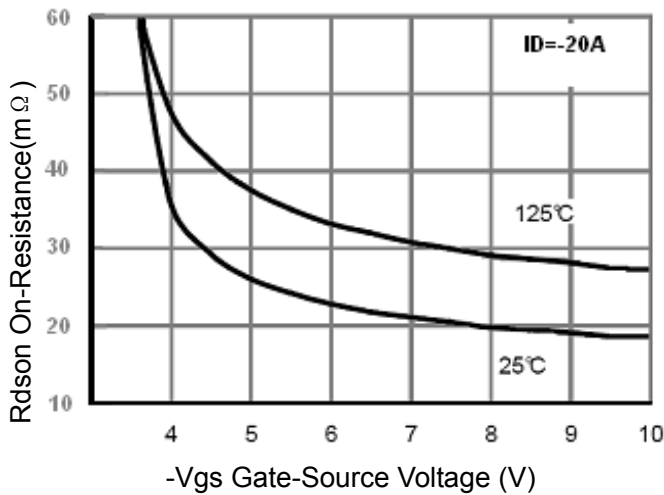


Figure 9 Rdson vs Vgs

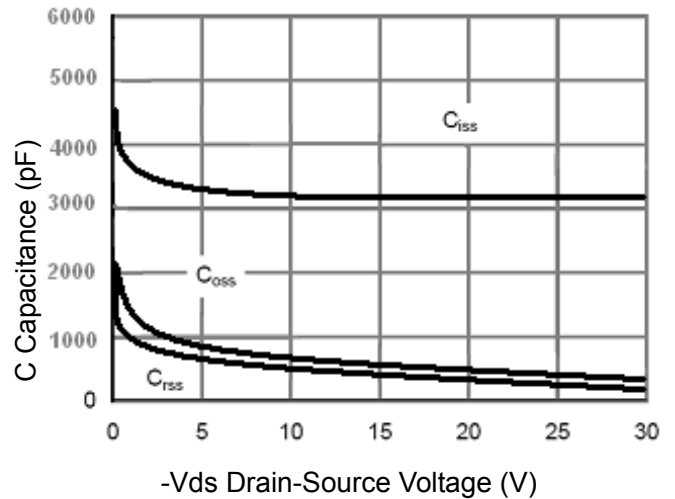


Figure 10 Capacitance vs Vds

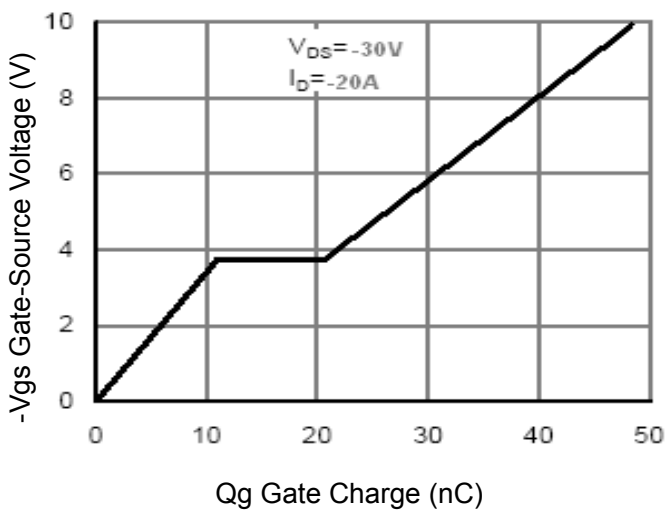


Figure 11 Gate Charge

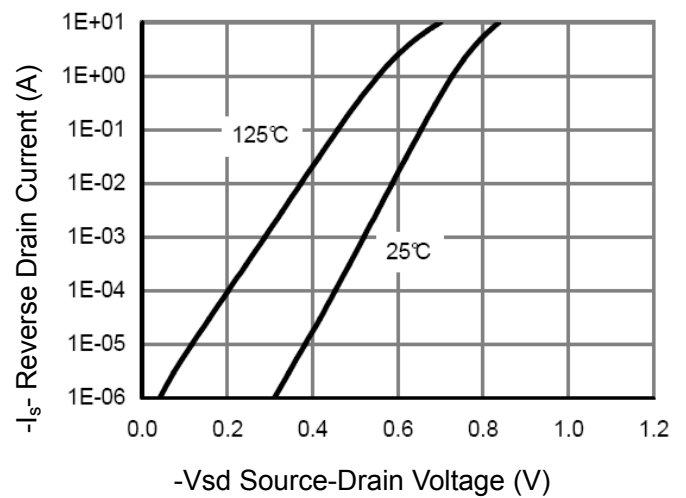


Figure 12 Source- Drain Diode Forward

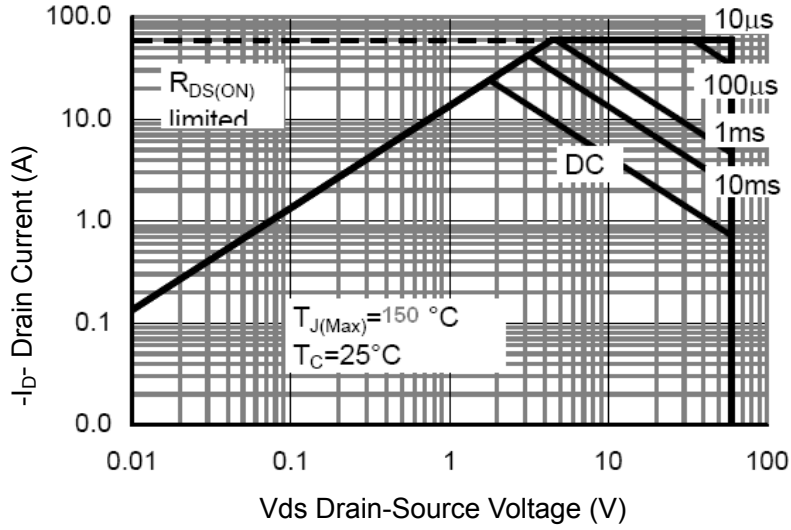


Figure 13 Safe Operation Area

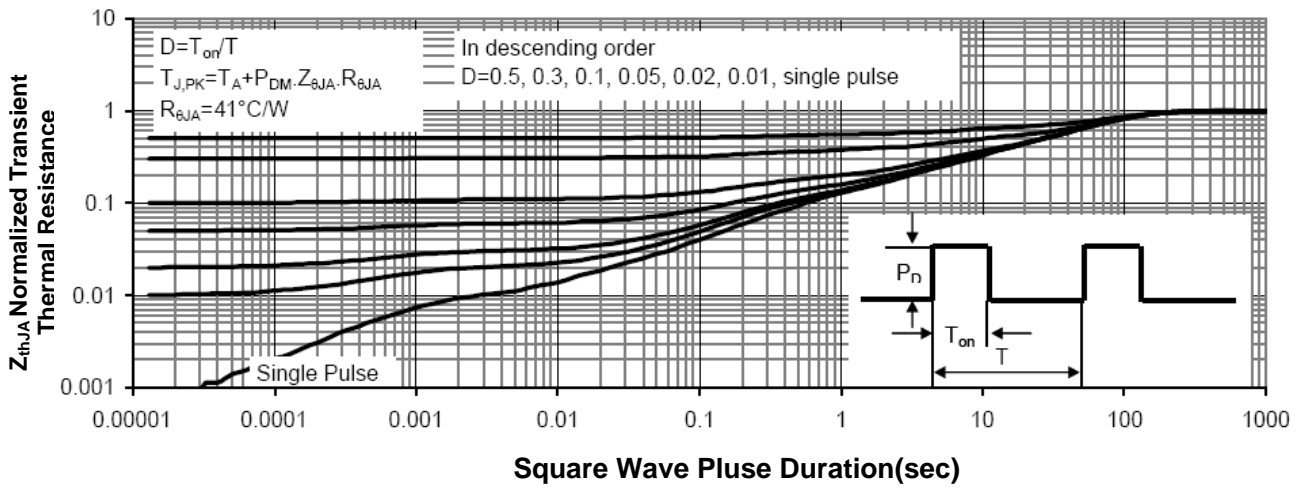
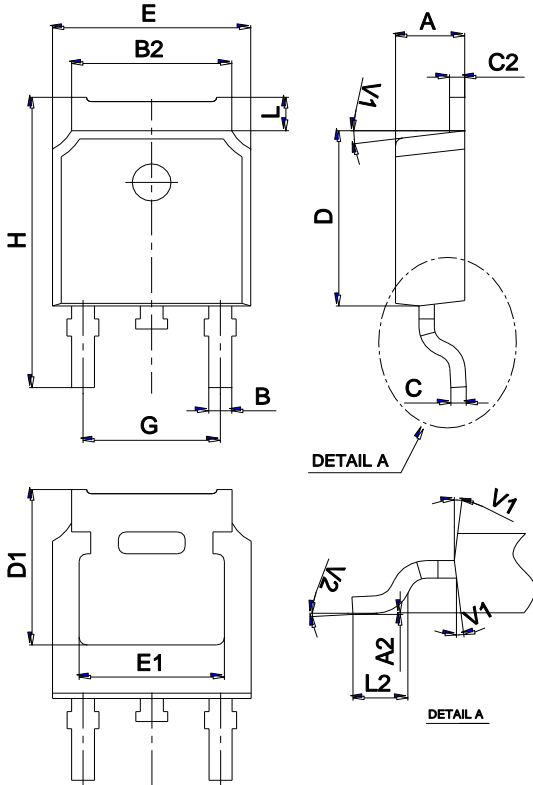


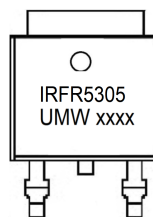
Figure 14 Normalized Maximum Transient Thermal Impedance

Package Mechanical Data TO-252



Ref.	Dimensions					
	Millimeters			Inches		
	Min.	Typ.	Max.	Min.	Typ.	Max.
A	2.10		2.50	0.083		0.098
A2	0		0.10	0		0.004
B	0.66		0.86	0.026		0.034
B2	5.18		5.48	0.202		0.216
C	0.40		0.60	0.016		0.024
C2	0.44		0.58	0.017		0.023
D	5.90		6.30	0.232		0.248
D1	5.30REF			0.209REF		
E	6.40		6.80	0.252		0.268
E1	4.63			0.182		
G	4.47		4.67	0.176		0.184
H	9.50		10.70	0.374		0.421
L	1.09		1.21	0.043		0.048
L2	1.35		1.65	0.053		0.065
V1		7°			7°	
V2	0°		6°	0°		6°

Marking



Ordering information

Order code	Package	Baseqty	Deliverymode
UMW IRFR5305TR	TO-252	2500	Tape and reel

单击下面可查看定价，库存，交付和生命周期等信息

[>>UMW\(友台半导体\)](#)