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台舟电子

IRFR7546TRPBF-TP

N-Channel Enhancement Mode MOSFET

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Product Summary

- V_{DS} 60 V
- I_{DS} 80A
- $R_{DS\ (ON)}$ (at V_{GS}=10) ≤5.8mΩ (Typ)
- Low Gate Charge Minimize Switching Loss

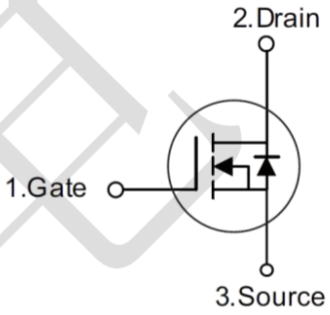
Application

- Adaptor
- Charger
- Power management
- SMPS Standby Power

Package and Pin Configuration

T0-252

Circuit diagram



Absolute Maximum Ratings

(T_A=25℃unless otherwise noted)

PARAMETER	SYMBOL	Value	UNIT
Drain-Source Voltage	V_{DS}	60	V
Gate-Source Voltage	V_{GS}	±20	V
Continuous Drain Current	I_D	80	A
Continuous Drain Current (TC=100℃)	I_D	42	A
Pulsed Drain Current (Note 1)	I_{DM}	270	A
Maximum Power Dissipation @T_A=25℃	P_D	100	W
Operating Junction Temperature Range	T_J	+150	℃
Storage Temperature Range	T_{stg}	-55 to +150	℃
Thermal Resistance,Junction to Case	$R_{\theta JC}$	2.1	°C/W

Note : When mounted on 1" square PCB (FR4 material).

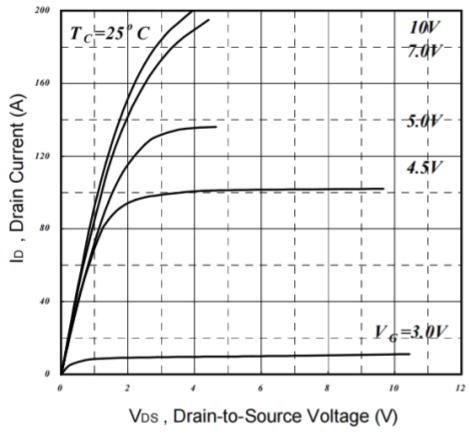
Electrical Characteristics (T_A=25℃unless otherwise noted)

PARAMETER	CONDITIONS	SYMBOL	MIN	TYP	MAX	UNIT
Static						
Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	BV_{DSS}	60	--	--	V
Gate-Source Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	$V_{GS(th)}$	1.5	3.0	4.5	V
Gate-Source Leakage	V_{DS}=0V, V_{GS}= ±20V	I_{GSS}	--	--	±100	nA
Zero Gate Voltage Drain Current	V_{DS}= 60V, V_{GS}=0V	I_{DSS}	--	--	10	μA
Drain-Source On-State Resistance	V_{GS}= 10V, I_D= 40A	R_{DS}(on)	--	5.8	6.8	mΩ
	V_{GS}= 4.5V, I_D= 20A		--	7.5	9.6	mΩ
Forward Trans conductance	V_{DS}=10V,I_D=30A	g_{FS}	--	70	--	S
Dynamic (Note 2)						
Total Gate Charge (Note 3)	V_{DS} = 48V, I_D =30A, V_{GS} = 4.5V	Q_g	--	33	--	nC
Gate-Source Charge (Note 3)		Q_{gs}	--	5.0	--	
Gate-Drain Charge (Note 3)		Q_{gd}	--	21	--	
Input Capacitance	V_{DS} = 25V, V_{GS} = 0V, F= 1.0MHz	C_{iss}	--	2660	--	pF
Output Capacitance		C_{oss}	--	280	--	
Reverse Transfer Capacitance		C_{rss}	--	200	--	
Switching						
Turn-On Delay Time (Note 3)	V_{DD} = 30V, I_D= 30A, V_{GS} = 10V, R_G = 3.3Ω	$t_{d(on)}$	--	10	--	nS
Rise Time (Note 3)		t_r	--	42	--	
Turn-Off Delay Time (Note 3)		$t_{d(off)}$	--	46	--	
Fall Time (Note 3)		t_f	--	80	--	
Source-Drain Diode Ratings and Characteristics (Note 2)						
Forward Voltage	V_{GS} = 0V, I_S = 10A	V_{SD}	--	0.8	1.2	V
Continuous Source Current	Integral reverse diode in the MOSFET	I_S	--	--	80	A
Pulsed Current (Note 1)		I_{SM}	--	--	270	A
Reverse recovery time	V_{GS}=0V ,I_F=20A, diF/dt=-100A/μs	trr	--	25	--	nS
Reverse recovery charge		Qrr	--	24	--	nC

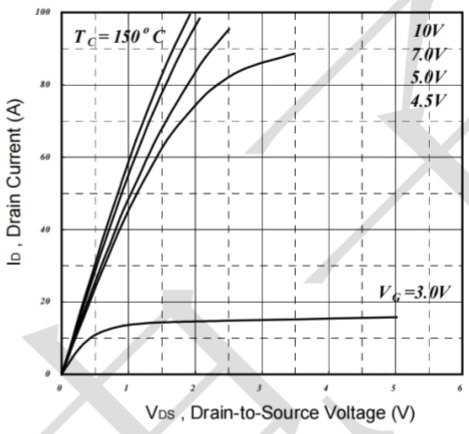
Notes:

1. Pulse test; pulse width ≤ 300 μS, duty cycle ≤ 1%.
2. Guaranteed by design, not subject to production testing.
3. Independent of operating temperature

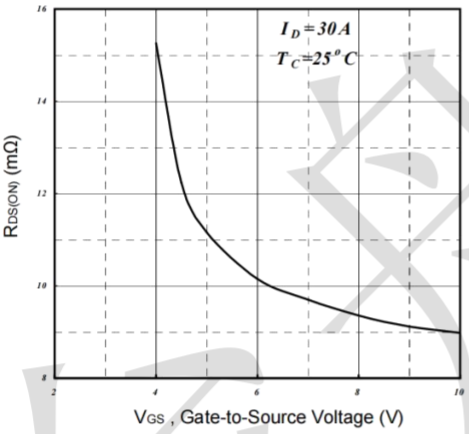
TYPICAL CHARACTERISTICS (T_A=25℃unless otherwise noted)



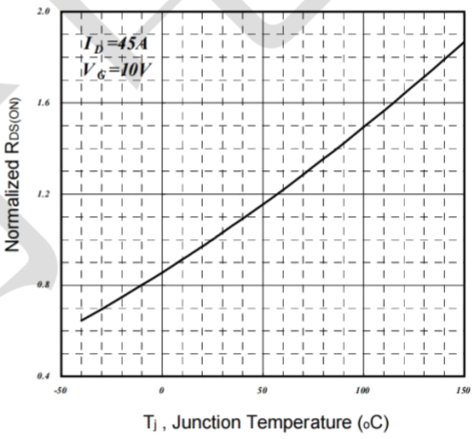
Typical Output Characteristics



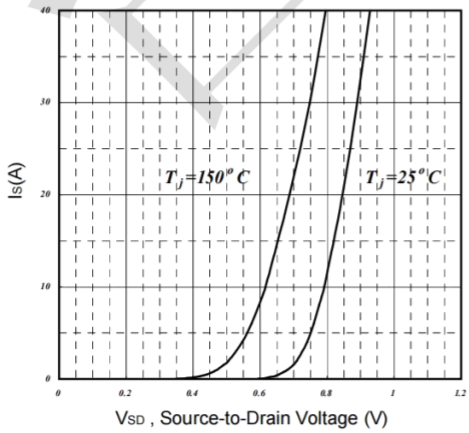
Typical Output Characteristics



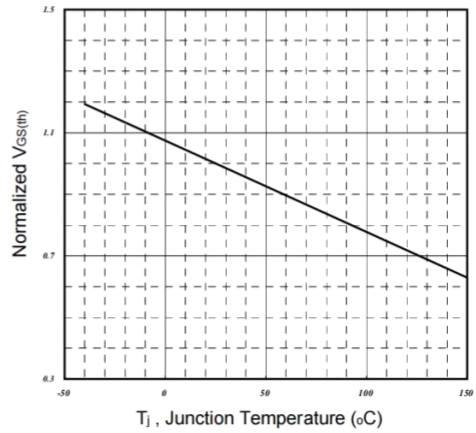
On-Resistance v.s. Gate Voltage



Normalized On-Resistance v.s. Junction Temperature



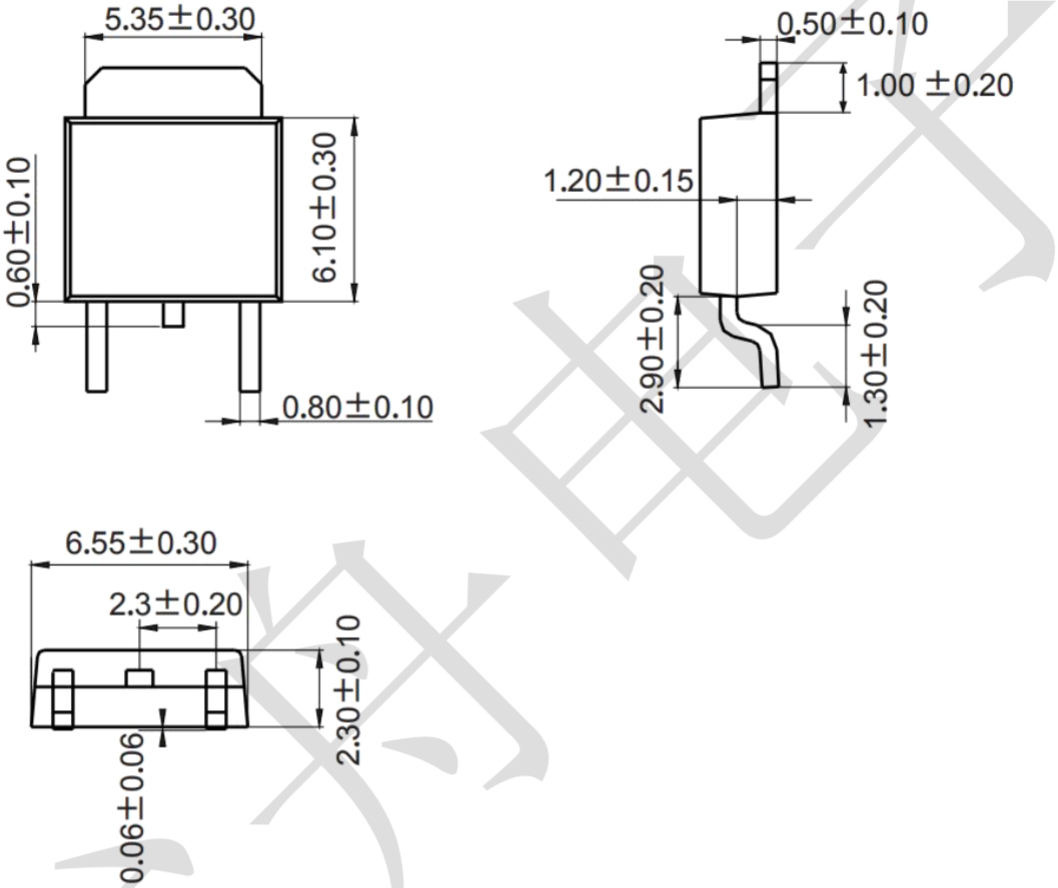
Forward Characteristic of Reverse Diode



Gate Threshold Voltage v.s. Junction Temperature

Package Outline Dimensions (unit: mm)

TO-252



Mounting Pad Layout (unit: mm)