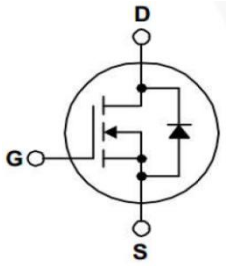
迈诺斯科技

IRFR7546TR

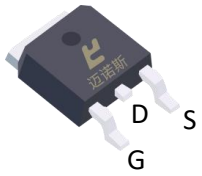
Silicon N-Channel Power MOSFET

Description

The IRFR7546TR uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge. It can be used in a wide variety of applications.



Schematic diagram



TO-252

General Features

① V_{DS}=60V,I_D=100A,$R_{DS(ON)}$<7.5mΩ@V_{GS}=10V
② Special process technology for high ESD capability
③ High density cell design for lower R_{dson}
④ Fully characterized avalanche voltage and current
⑤ Good stability and uniformity with high EAS

Application

① Power switching application
② Hard switched and High frequency circuits
③ Uninterruptible power supply

Package Marking And Ordering Information

Ordering Codes	Package	Product Code	Packing
IRFR7546TR	TO-252	FR7546	Reel

ABSOLUTE RATINGS (at T_C=25°C unless otherwise specified)

Symbol	Parameter	Value	Units
V_{DSS}	Drain-to-Source Breakdown Voltage	60	V
I_D	Drain Current (continuous) at Tc=25℃	100	A
I_{DM}	Drain Current (pulsed)	320	A
V_{GS}	Gate to Source Voltage	±20	V
P_{tot}	Total Dissipation at Tc=25℃	107	W
T_j	Max. Operating Junction Temperature	175	℃
Eas	Single Pulse Avalanche Energy	280	mj

Thermal characteristics

Symbol	Parameter	Typ	Units
$R_{\theta JC}$	Junction-to-Case	1.4	℃/W
$R_{\theta JA}$	Junction-to-Ambient	62.5	℃/W

Electrical Characteristics (at T_C=25°C unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V_{DS}	Drain-source Voltage	V_{GS}=0V, I_D=250μA	60	--	--	V
$R_{DS(on)}$	Static Drain-to-Source on-Resistance	V_{GS}=10V, I_D=20A	--	6.5	7.5	mΩ
$V_{GS(th)}$	Gated Threshold Voltage	V_{DS}=V_{GS}, $_D$=250μA	2	3	4	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=60V, V_{GS}= 0V	--	--	1.0	μA
$I_{GSS(F)}$	Gated Body Leakage Current	V_{GS} = +20V	--	--	100	nA
$I_{GSS(R)}$	Gated Body Leakage Current	V_{GS} = -20V	--	--	-100	nA
C_{iss}	Input Capacitance	V_{GS}=0V,V_{DS}=40V f=1.0MHZ	--	3000	--	pF
C_{oss}	Output Capacitance		--	270	--	pF
C_{rss}	Reverse Transfer Capacitance		--	240	--	pF
Q_g	Total Gate Charge	V_{DS}=48V,I_D=40A V_{GS}=10V	--	72	--	nC
Q_{gs}	Gate-Source Charge		--	21.5	--	nC
Q_{gd}	Gate-Drain Charge		--	28	--	nC

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
$t_{d(on)}$	Turn-on Delay Time	V_{DD}=30V, I_D=30A V_{GS}=10V,R_{GEN}=3 Ω	--	8.5	--	nS
t_r	Turn-on Rise Time		--	7	--	nS
$t_{d(off)}$	Turn-off Delay Time		--	40	--	nS
t_f	Turn-off Fall Time		--	15	--	nS

Drain-Source Diode Characteristics						
V_{SD}	Diode Forward Voltage	VGS=0V,IS=80A	--	--	1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature
2. E_{AS} condition :T_j=25℃,V_{DD}=50V,V_G=10V,L=0.5mH,Rg=25Ω
3. Pulse Test: Pulse Width ≤ 300μs, Duty Cycle ≤ 2%
4. Guaranteed by design, not subject to production

Characteristics Curves

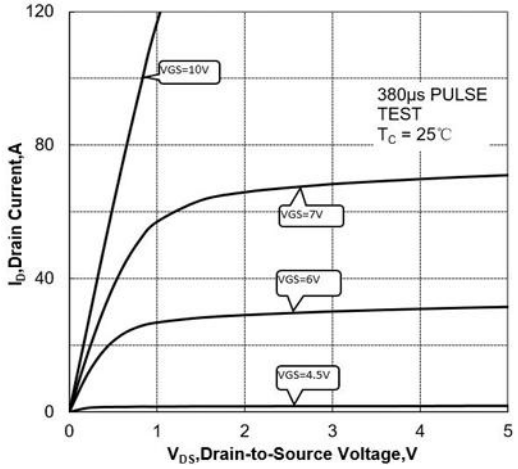
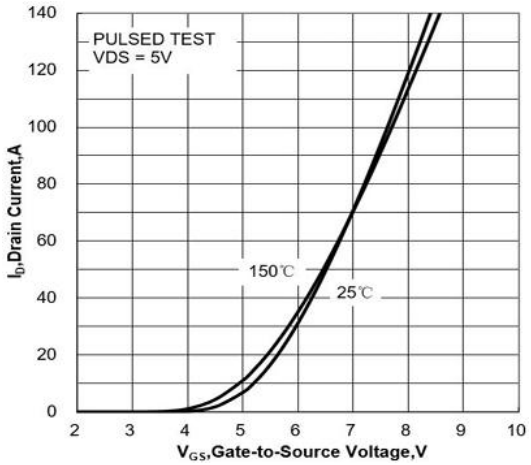
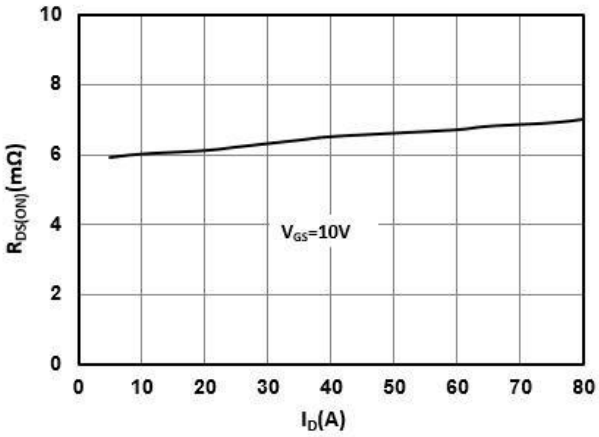
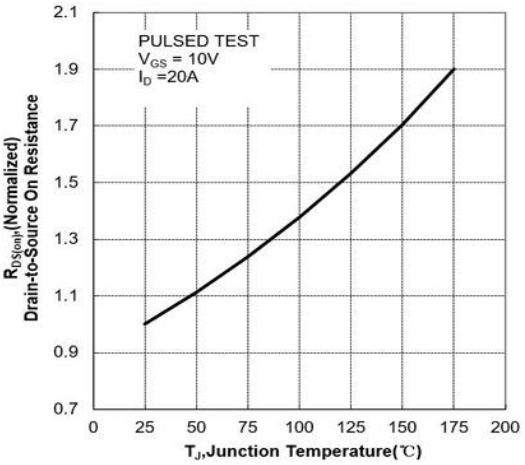
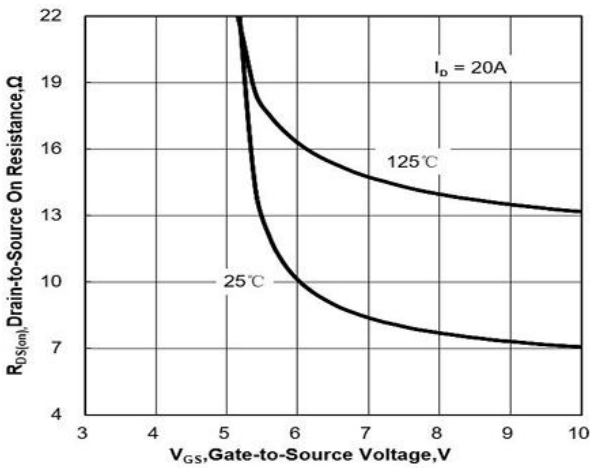
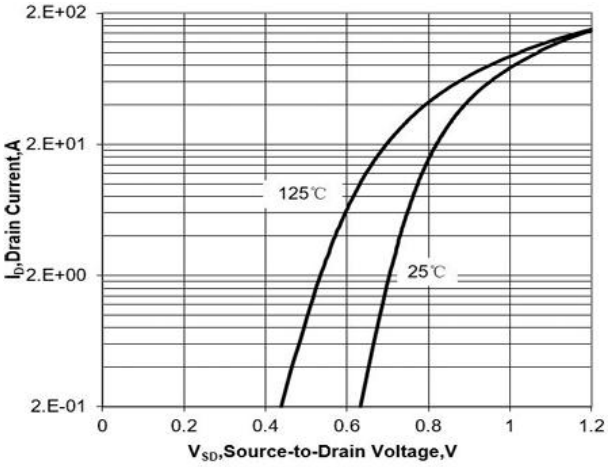
Figure 1 Output Characteristics	Figure 2 Transfer Characteristics
	
Figure 3 On-Resistance vs. ID and VGS	**Figure 4 On-Resistance vs. Junction Temperature**
	
Figure 5 On-Resistance vs. VGS	**Figure 6 Body Diode Forward Voltage**
	

Figure 7 Gate-Charge Characteristics

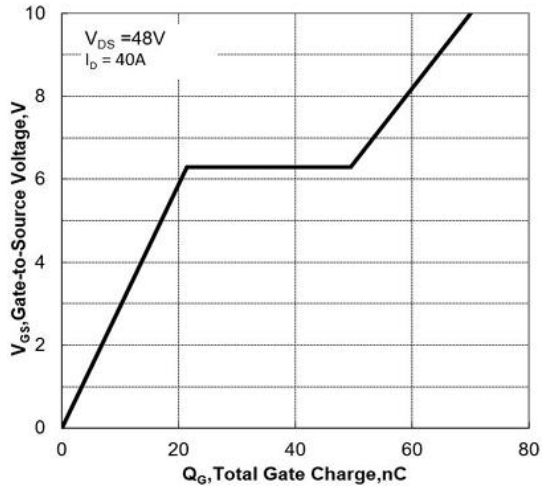


Figure 8 Capacitance Characteristics

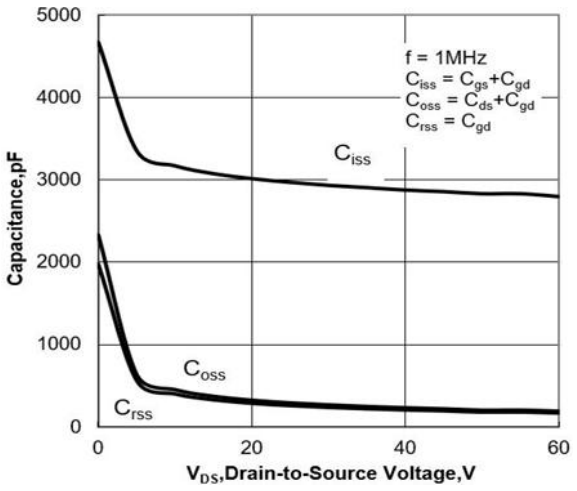


Figure 9 Maximum Forward Biased Safe Operation Area

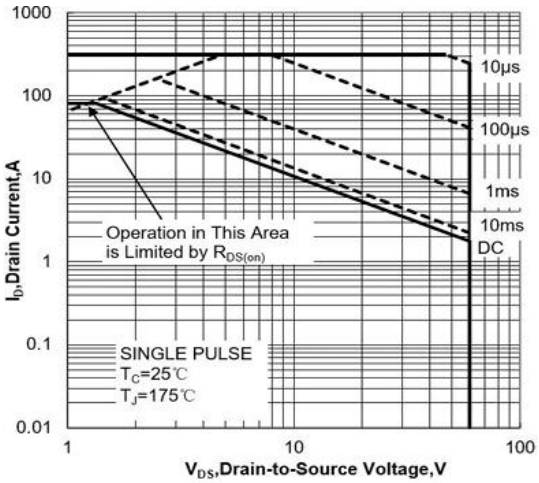


Figure 10 Single Pulse Power Rating Junction-to-Ambient

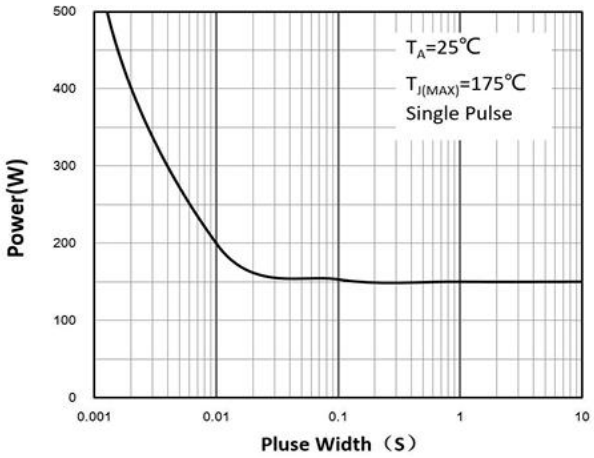
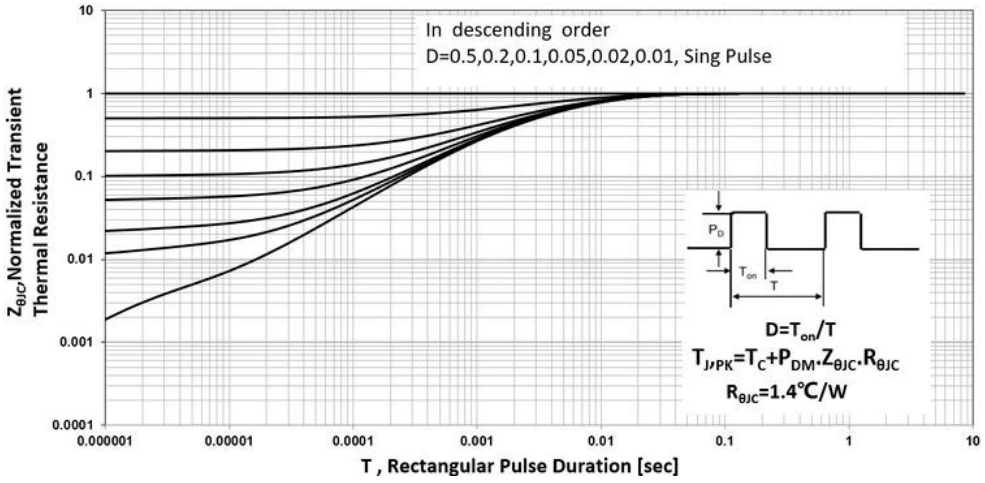
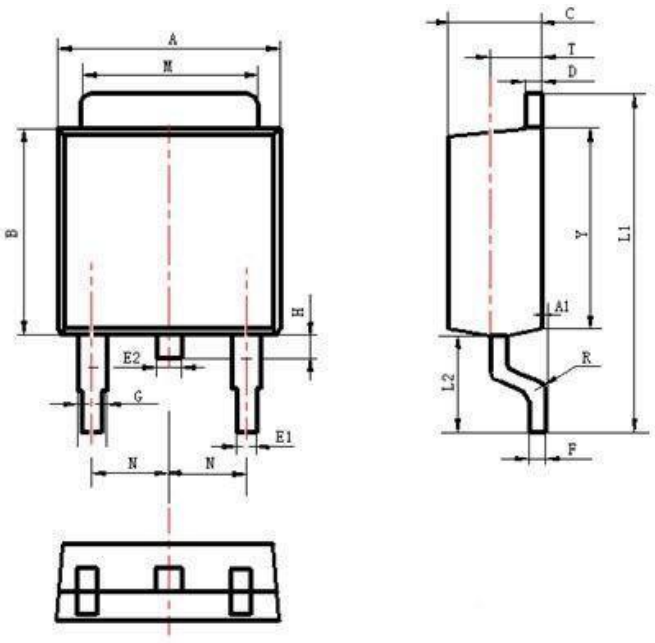


Figure 11 Normalized Maximum Transient Thermal Impedance



Package Description



Items	Values(mm)	
	MIN	MAX
A	6.30	6.90
A1	0	0.13
B	5.70	6.30
C	2.10	2.50
D	0.30	0.60
E1	0.60	0.90
E2	0.70	1.00
F	0.30	0.60
G	0.70	1.20
L1	9.60	10.50
L2	2.70	3.10
H	0.60	1.00
M	5.10	5.50
N	2.09	2.49
R	0.3	
T	1.40	1.60
Y	5.10	6.30

TO-252 Package

NOTE:

1. Exceeding the maximum ratings of the device in performance may cause damage to the device, even the permanent failure, which may affect the dependability of the machine. Please do not exceed the absolute maximum ratings of the device when circuit designing.
2. When installing the heat sink, please pay attention to the torsional moment and the smoothness of the heat sink.
3. MOSFETs is the device which is sensitive to the static electricity, it is necessary to protect the device from being damaged by the static electricity when using it.
4. Shenzhen Minos reserves the right to make changes in this specification sheet and is subject to change without prior notice.

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