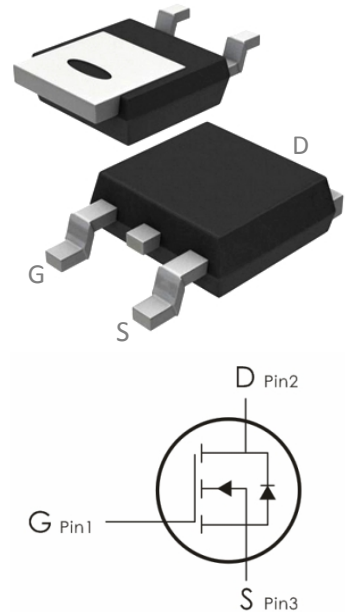


Description:

This N-Channel MOSFET uses advanced SGT technology and design to provide excellent $R_{DS(on)}$ with low gate charge. It can be used in a wide variety of applications.

Features:

- 1) $V_{DS}=100V, I_D=25A, R_{DS(on)} < 25m\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra low $R_{DS(on)}$.
- 5) Excellent package for good heat dissipation.



Package Marking and Ordering Information:

Part NO.	Marking	Package	Packing
IRFR3518	FR3518	TO- 252	2500 pcs/Reel

Absolute Maximum Ratings: ($T_J=25^\circ C$ unless otherwise noted)

Symbol	Parameter	Ratings	Units
V_{DS}	Drain-Source Voltage	100	V
V_{GS}	Gate-Source Voltage	± 20	V
I_D	Continuous Drain Current ¹ - $T_C=25^\circ C$	25	A
E_{AS}	Single Pulse Avalanche Energy ⁵	8	mJ
I_{DM}	Pulsed Drain Current ² - $T_C=25^\circ C$	84	A
I_S	Continuous diode forward current ¹ - $T_C=25^\circ C$	25	A
I_{SM}	Diode pulsed current ² - $T_C=25^\circ C$	84	A
P_D	Power Dissipation ³ - $T_C=25^\circ C$	27	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	$^\circ C$

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case	4.63	$^\circ C/W$

R_{θJA}	Thermal resistance, junction-ambient ⁴	62	°C/W
------------------------	---	----	------

Electrical Characteristics: (T_J=25°C unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250 μ A	100	---	---	V
I _{DSS}	Zero Gate Voltage Drain Current	V _{GS} =0V, V _{DS} =100V	---	---	1	μ A
I _{GSS}	Gate-Source Leakage Current	V _{GS} = ± 20V	---	---	± 100	nA
On Characteristics						
V _{GS(th)}	GATE-Source Threshold Voltage	V _{GS} =V _{DS} , I _D =250 μ A	1	---	2.5	V
R _{DS(ON)}	Drain-Source On Resistance	V _{GS} =10V, I _D =10A	---	20	25	m Ω
		V _{GS} =4.5V, I _D =10A	---	25	30	
Dynamic Characteristics						
C _{iss}	Input Capacitance	V _{DS} =25V, V _{GS} =0V, f=1MHz	---	680	---	pF
C _{oss}	Output Capacitance		---	371	---	
C _{rss}	Reverse Transfer Capacitance		---	25	---	
Switching Characteristics						
t _{d(on)}	Turn-On Delay Time	V _{GS} =10V ,V _{DS} =50V, R _G =2Ω, I _D =20A	---	16.8	---	ns
t _r	Rise Time		---	3.2	---	ns
t _{d(off)}	Turn-Off Delay Time		---	25.4	---	ns
t _f	Fall Time		---	2	---	ns
Q _g	Total Gate Charge	V _{GS} =10V, V _{DS} =50V, I _D =20A	---	11	---	nC
Q _{gs}	Gate-Source Charge		---	1.8	---	nC
Q _{gd}	Gate-Drain “Miller” Charge		---	2.4	---	nC
Drain-Source Diode Characteristics						

V_{SD}	Source-Drain Diode Forward Voltage	$V_{GS}=0V, I_S=20A$	---	---	1.3	V
t_{rr}	Body Diode Revrse Recovery Time	$I_S=20A, V_R=50V$ $dI/dt=100A/\mu s$	---	41.6	---	ns
Q_{rr}	Body Diode Revrse Recovery Charge		---	54.6	---	nc

Notes:

1. Calculated continuous current based on maximum allowable junction temperature.
2. Repetitive rating; pulse width limited by max. junction temperature.
3. Pd is based on max. junction temperature, using junction-case thermal resistance.
4. The value of $R_{\theta JA}$ is measured with the device mounted on 1 in 2 FR-4 board with 2oz. Copper, in a still air environment with $T_a=25^\circ C$.
5. $V_{DD}=30V, V_{GS}=10V, L=0.3mH$, starting $T_j=25^\circ C$.

Typical Characteristics: ($T_A=25^\circ C$ unless otherwise noted)

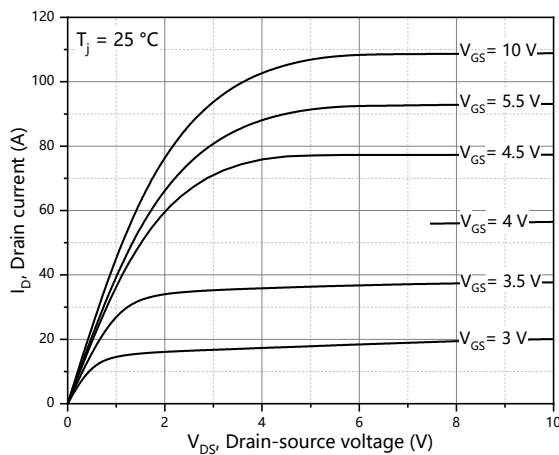


Figure 1. Typ. output characteristics

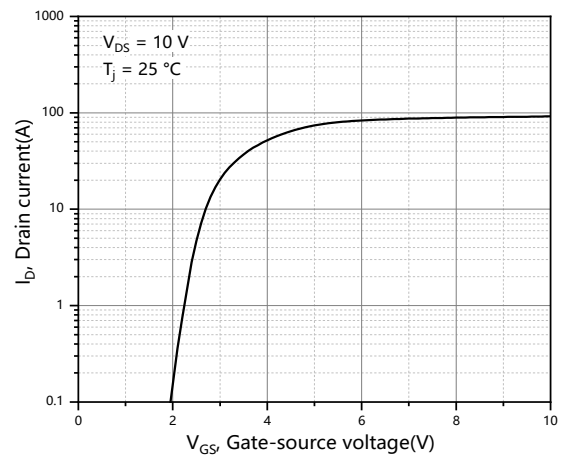


Figure 2. Typ. transfer characteristics

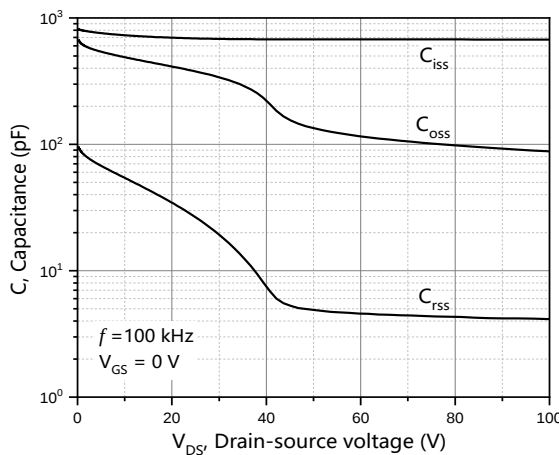


Figure 3. Typ. capacitances

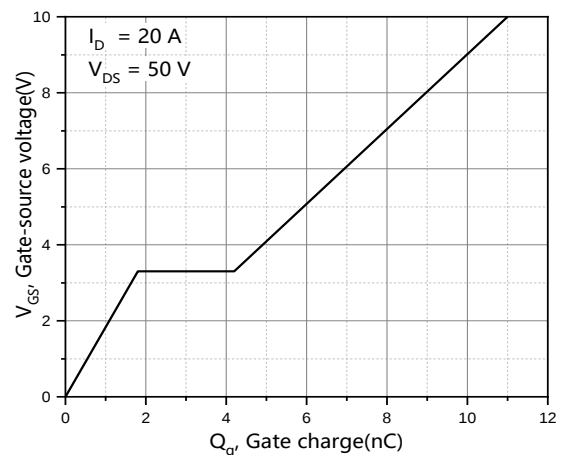


Figure 4. Typ. gate charge

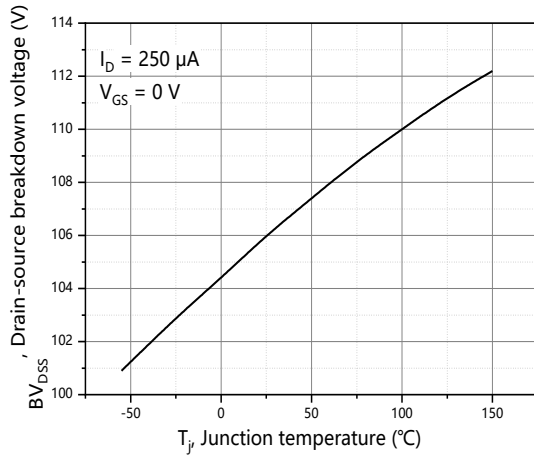


Figure 5. Drain-source breakdown voltage

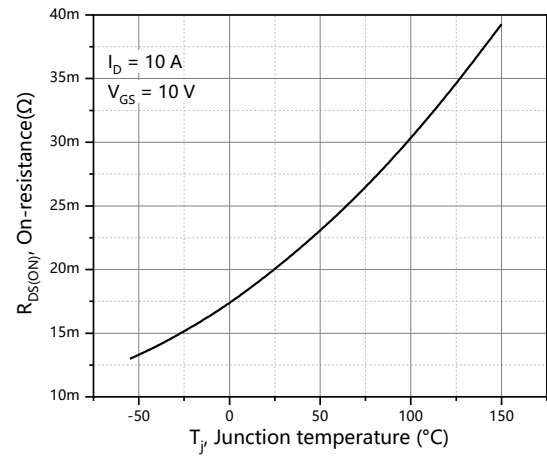


Figure 6. Drain-source on-state resistance

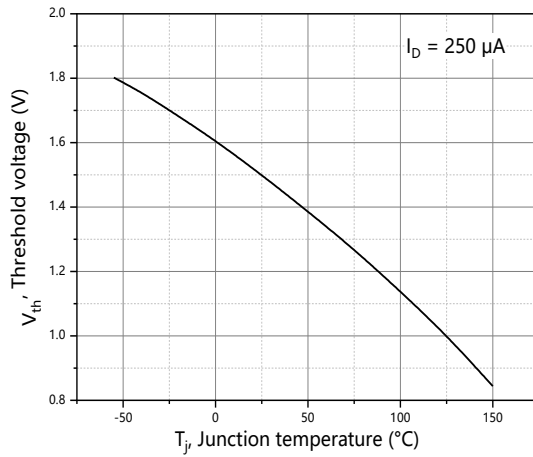


Figure 7. Threshold voltage

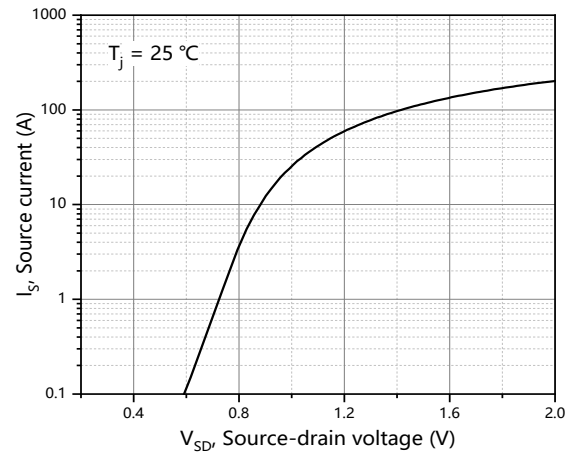


Figure 8. Forward characteristic of body diode

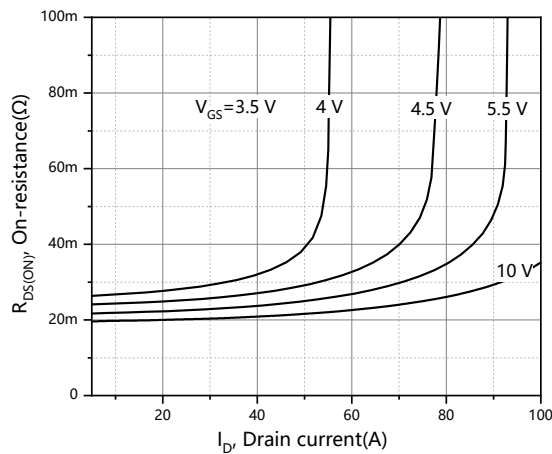


Figure 9. Drain-source on-state resistance

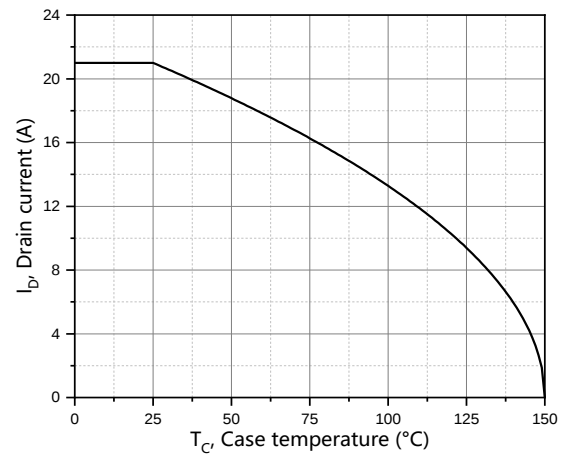


Figure 10. Drain current

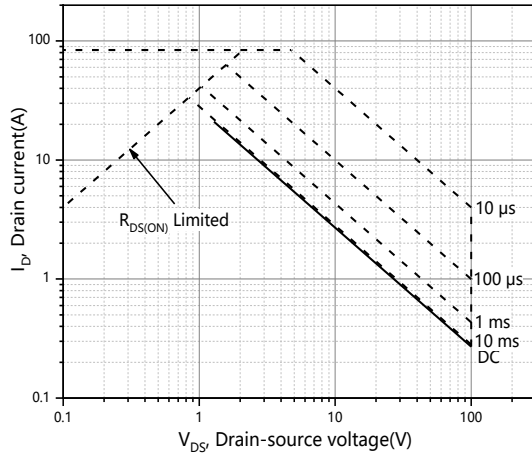


Figure 11. Safe operation area $T_C=25^\circ\text{C}$

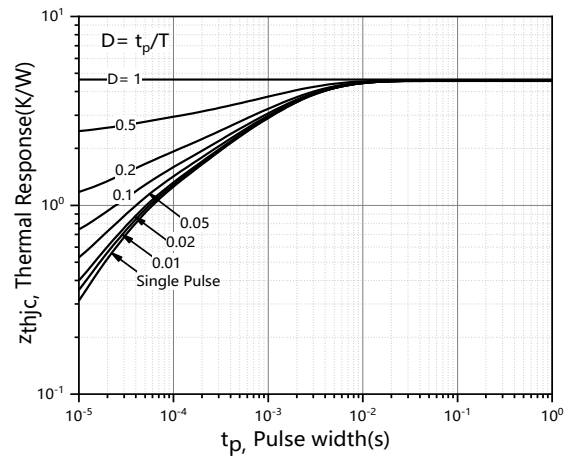
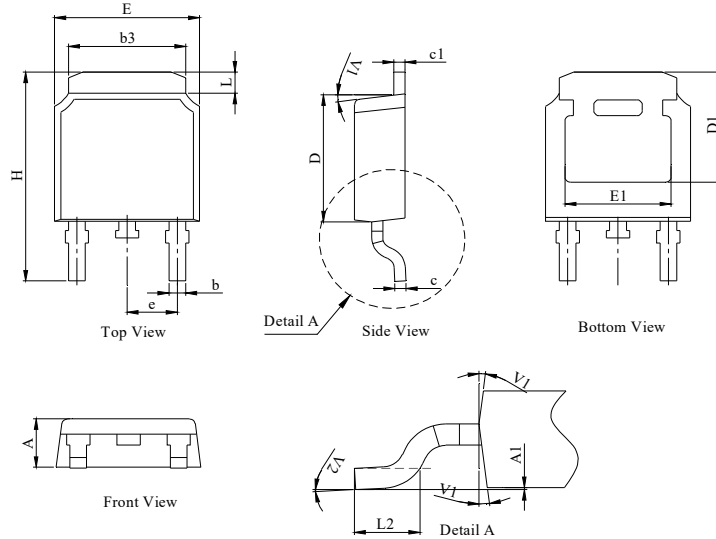


Figure 12. Max. transient thermal impedance

TO-252 Package Information

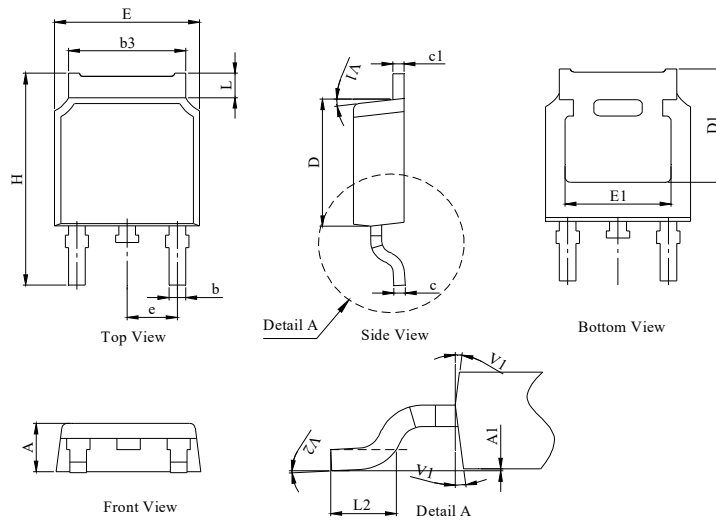
Package Outline Type-A

UNIT: mm



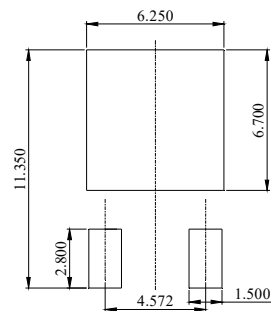
DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.18	2.30	2.39
A1	0	--	0.13
b	0.64	0.76	0.89
c	0.40	0.50	0.61
c1	0.46	0.50	0.58
D	5.97	6.10	6.23
D1	5.05	--	--
E	6.35	6.60	6.73
E1	4.32	--	--
b3	5.21	5.38	5.55
e	2.29 BSC		
H	9.40	10.00	10.40
L	0.89	--	1.27
L2	1.40	--	1.78
V1	7° REF		
V2	0°	--	6°

Package Outline Type-B



DIM.	MILLIMETER		
	MIN.	NOM.	MAX.
A	2.10	2.30	2.40
A1	0	--	0.13
b	0.66	0.76	0.86
b3	5.21	5.38	5.55
c	0.40	0.50	0.60
c1	0.44	0.50	0.58
D	5.90	6.10	6.30
D1	5.30REF		
E	6.40	6.60	6.80
E1	4.63	-	-
e	2.29 BSC		
H	9.50	10.00	10.70
L	1.09	--	1.21
L2	1.35	--	1.65
V1	7° REF		
V2	0°	--	6°

Recommended Soldering Footprint



Marking Information:

①. Doingter LOGO

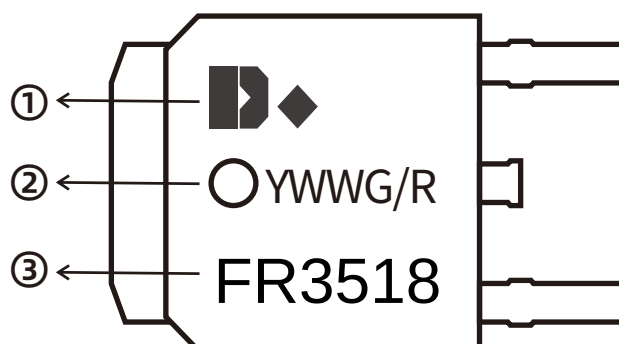
②. Date Code(YWWG / R)

Y : Year Code , last digit of the year

WW : Week Code(01-53)

G/R : G(Green) /R(Lead Free)

③. Part NO.



Attention :

- Information furnished in this document is believed to be accurate and reliable. However, Shenzhen Doingter Semiconductor Co.,Ltd. assumes no responsibility for the consequences of use without consideration for such information nor use beyond it.
- Information mentioned in this document is subject to change without notice, apart from that when an agreement is signed, Shenzhen Doingter complies with the agreement. Products and information provided in this document have no infringement of patents.
- Shenzhen Doingter assumes no responsibility for any infringement of other rights of third parties which may result from the use of such products and information. This document supersedes and replaces all information previously supplied.  Is a registered trademark of Shenzhen Doingter Semiconductor Co., Ltd. Copyright © 2013 Shenzhen Doingter Semiconductor Co.,Ltd. Printed All rights reserved.