

N-Channel MOSFETS

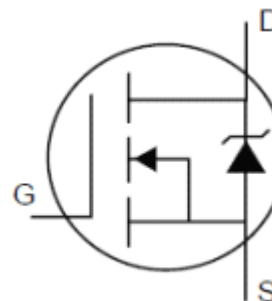
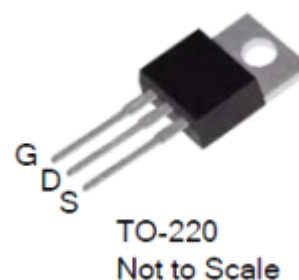
DESCRIPTION

The OGFD 1404TR 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.

V_{DSS}	$R_{DS(ON)}$	I_D
40V	4m Ω	190A

Features:

- High density cell design for ultra low R_{dson} .
- Fully characterized avalanche voltage and current.
- Good stability and uniformity with high E_{AS} .
- Excellent package for good heat dissipation.
- Special process technology for high ESD capability.



Applications

- Power switching applications.
- Inverter systems
- Hard switched and high frequency circuits.
- Uninterruptible power supply systems.

Ordering Information

PART NUMBER	PACKAGE	BRAND
1404TR	TO-220	OGFD

Absolute Maximum Ratings (TC=25°C, unless otherwise noted)

Symbol	Parameter	1404TR	Units
V _{DSS}	Drain-to-Source Voltage	40	V
I _D	Continuous Drain Current	190	A
I _{DM}	Pulsed Drain Current@VG=10V	750	
P _D	Power Dissipation	220	W
	Derating Factor above 25°C	1.47	W/°C
V _{GS}	Gate-to-Source Voltage	± 20	V
E _{AS}	Single Pulse Avalanche Energy (L=1mH, I _{AS} =40A)C	1400	mJ
dv/dt	Peak Diode Recovery dv/dt	5.0	V/ns
T _J and T _{STG}	Operating Junction and Storage Temperature Range	-55 to 175	°C

Thermal Resistance

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
R _{θJC}	Junction-to-Case	--	--	0.68	°C/W	Water cooled heatsink, PD adjusted for a peak junction temperature of +175°C.
R _{θJA}	Junction-to-Ambient	--	--	--		1 cubic foot chamber, free air.

OFF Characteristics T_J=25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
B _V DSS	Drain-to-Source Breakdown Voltage	40	--	--	V	V _{GS} =0, I _D =250uA
I _{GSS}	Gate-to-Source Forward Leakage	--	--	±100	nA	V _{DS} =0V, V _{GS} =±20V
I _{DSS}	Zero Gate Voltage Drain Current	--	--	1	uA	V _{DS} =40V, V _{GS} =0V

ON Characteristics T_J=25°C unless otherwise specified

Symbol	Parameter	Min.	Typ.	Max	Units	Test Conditions
R _{DS(ON)}	Static Drain-to-Source On-Resistance	--	--	4	mΩ	V _{GS} =10V, I _D =40A
V _{GS(TH)}	Gate Threshold Voltage, Figure 12.	2.0	--	4.0	V	V _{DS} =10V, I _D =250uA
G _{fs}	Forward Transconductance	170	---	--	S	V _{DS} =50V, I _D =75A

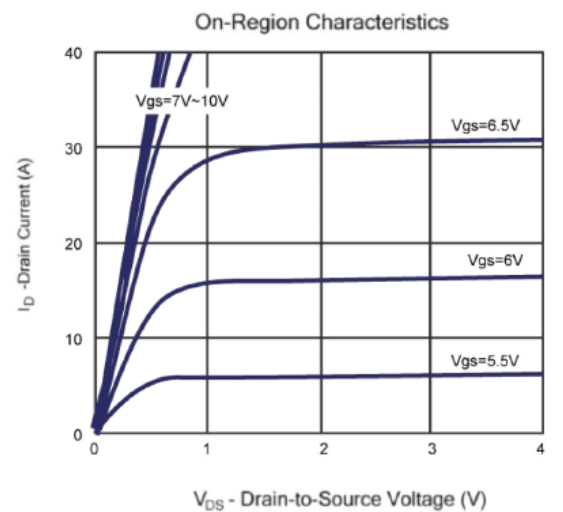
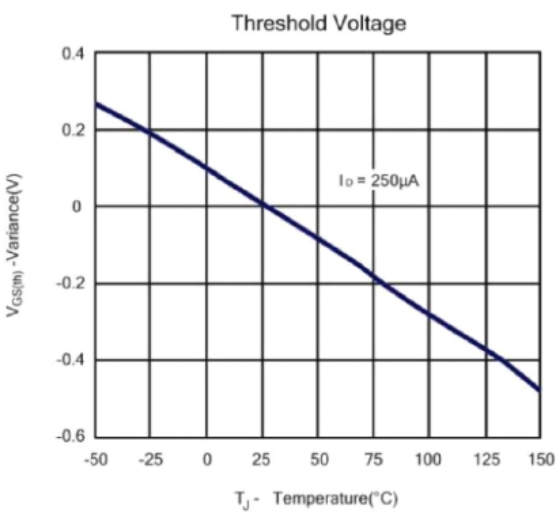
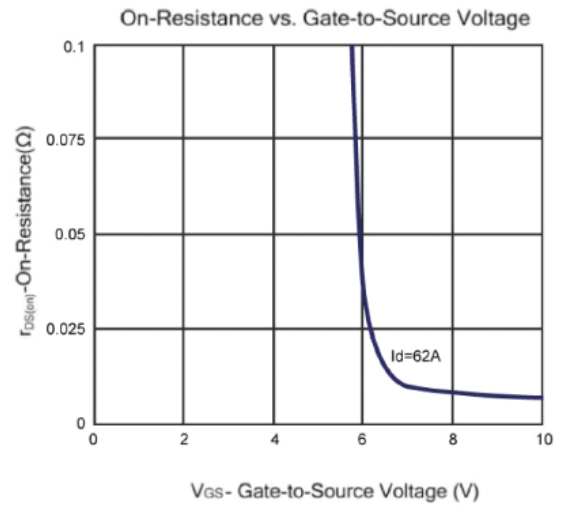
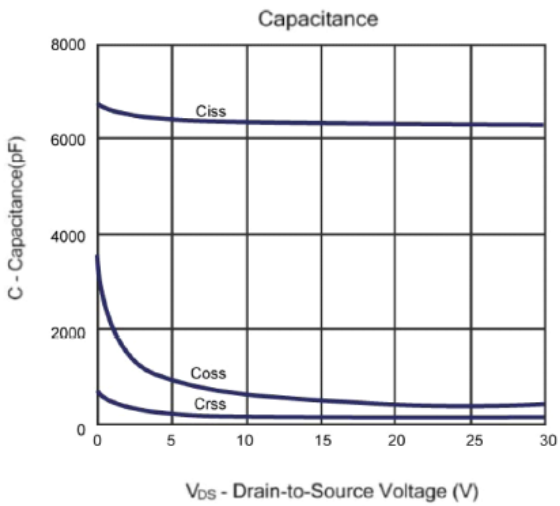
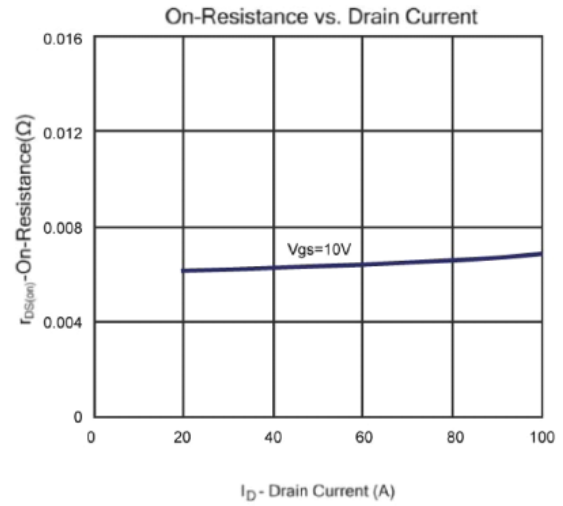
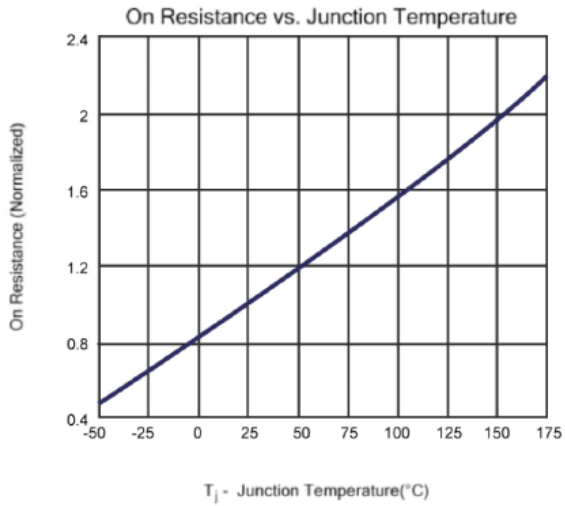
Dynamic Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
C _{iss}	Input Capacitance	--	6500	--	pF	V _{DS} =25V, V _{GS} =0V, f=1.0MHZ
C _{oss}	Output Capacitance	--	916	--		
C _{rss}	Reverse Transfer Capacitance	--	780	--		
Q _g	Total Gate Charge	--	163	--	nC	V _{DS} =30V, V _{GS} =10V, I _D =30A
Q _{gs}	Gate-to-Source Charge	--	31	--		
Q _{gd}	Gate-to-Drain ("Miller") Charge	--	64	--		

Resistive Switching Characteristics Essentially independent of operating temperature

Symbol	Parameter	Min.	Typ.	Max.	Units	Test Conditions
T _{d(ON)}	Turn-on Delay Time		26		ns	V _{DD} =30V, R _L =15Ω V _{GS} =10V, R _G =2.5Ω I _D =2A
T _{rise}	Rise Time		24			
T _{d(OFF)}	Turn-Off Delay Time		91			
T _{fall}	Fall Time		39			

Typical Characteristics (T_J = 25°C Noted)



Typical Characteristics ($T_J = 25^\circ\text{C}$ Noted)