

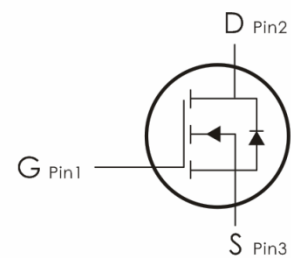
Description:

This N-Channel MOSFET 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.



Features:

- 1) $V_{DS}=100V, I_D=60A, R_{DS(ON)} < 17.5 \text{ m}\Omega @ V_{GS}=10V$
- 2) Low gate charge.
- 3) Green device available.
- 4) Advanced high cell density trench technology for ultra $R_{DS(ON)}$.
- 5) Excellent package for good heat dissipation.



Absolute Maximum Ratings: ($T_C=25^\circ\text{C}$ 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-TC=25°C	60	A
	Continuous Drain Current-TC=100°C	40	
I_{DM}	Pulsed Drain Current	160	
E_{AS}		580	mJ
P_D	Power Dissipation	160	W
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	°C

Thermal Characteristics:

Symbol	Parameter	Max	Units
$R_{\theta JC}$	Thermal Resistance, Junction to Case ²	0.94	°C/W

Package Marking and Ordering Information:

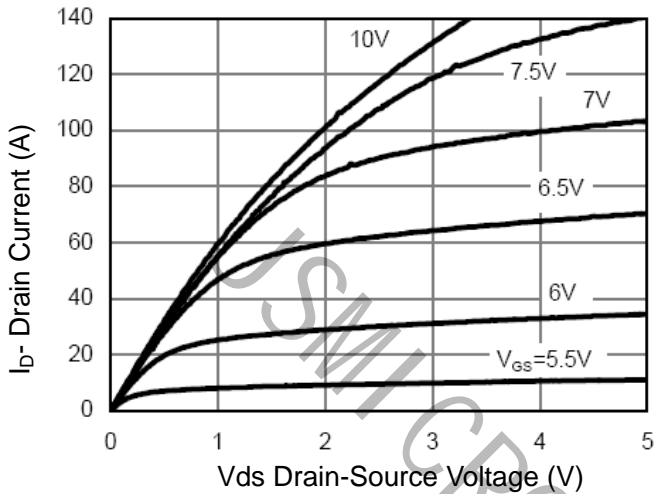
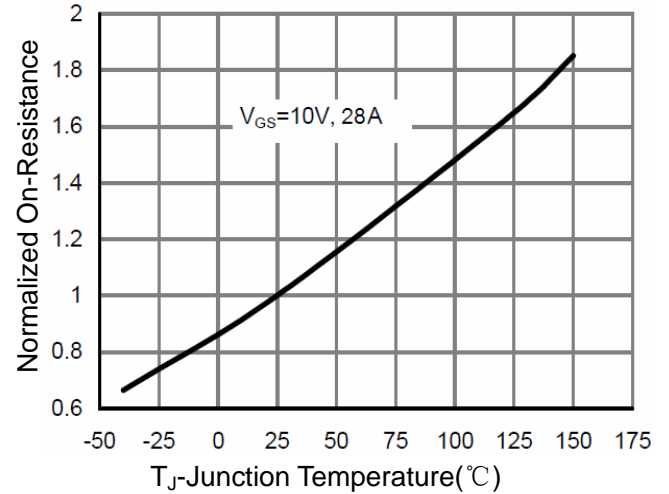
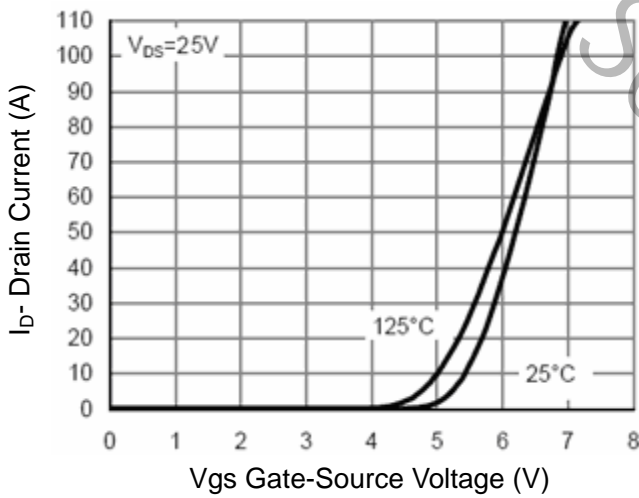
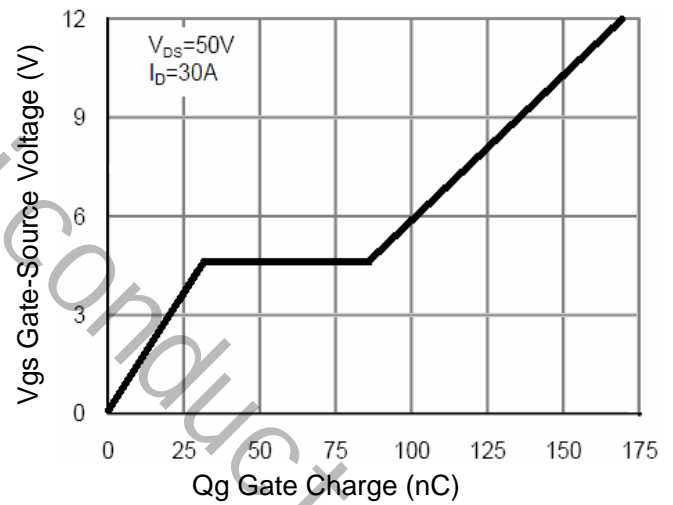
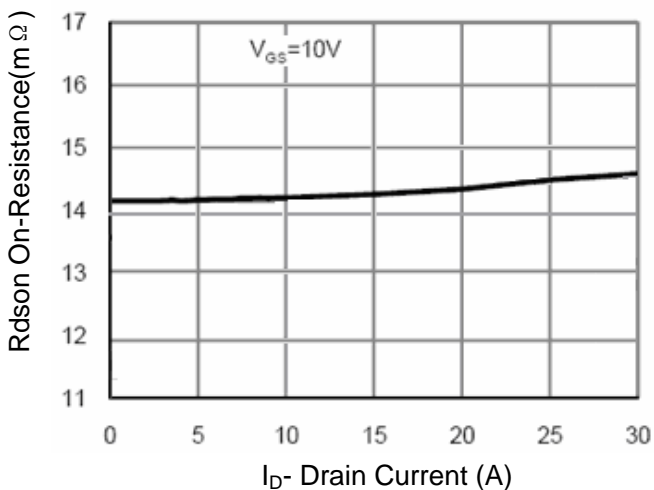
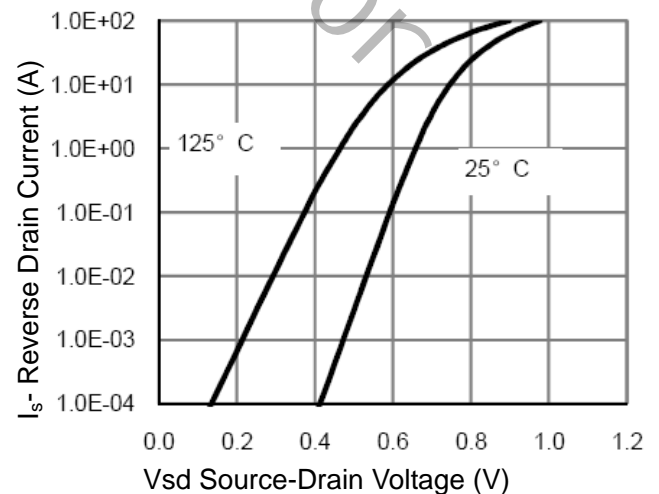
Part NO.	Marking	Package
IRF3710ZPBF	IRF3710ZPBF	TO-220

 Electrical Characteristics: ($T_C=25^{\circ}\text{C}$ unless otherwise noted)

Symbol	Parameter	Conditions	Min	Typ	Max	Units
Off Characteristics						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=250\ \mu\text{A}$	100	110	---	V
I_{DSS}	Zero Gate Voltage Drain Current	$V_{GS}=0V, V_{DS}=100V$	---	---	1	μA
I_{GSS}	Gate-Source Leakage Current	$V_{GS}=\pm 20V, V_{DS}=0A$	---	---	± 100	nA
On Characteristics						
$V_{GS(th)}$	GATE-Source Threshold Voltage ³	$V_{GS}=V_{DS}, I_D=250\ \mu\text{A}$	2	3	4	V
$R_{DS(on)}$	Drain-Source On Resistance ³	$V_{GS}=10V, I_D=28A$	---	14.5	17.5	$\text{m}\Omega$
Dynamic Characteristics						
C_{iss}	Input Capacitance ⁴	$V_{DS}=25V, V_{GS}=0V, f=1\text{MHz}$	---	3968	---	pF
C_{oss}	Output Capacitance ⁴		---	182.4	---	
C_{rss}	Reverse Transfer Capacitance ⁴		---	160	---	
Switching Characteristics						
$t_{d(on)}$	Turn-On Delay Time ⁴	$V_{DD}=30V, I_D=2A,$ $R_{GEN}=2.5\ \Omega, V_{GS}=10V$	---	16	---	ns
t_r	Rise Time ⁴		---	12	---	ns
$t_{d(off)}$	Turn-Off Delay Time ⁴		---	54	---	ns
t_f	Fall Time ⁴		---	15	---	ns
Q_g	Total Gate Charge ⁴	$V_{GS}=10V, V_{DS}=30V,$ $I_D=30A$	---	146	---	nC
Q_{gs}	Gate-Source Charge ⁴		---	29	---	nC
Q_{gd}	Gate-Drain "Miller" Charge ⁴		---	57	---	nC
Drain-Source Diode Characteristics						
V_{SD}	Source-Drain Diode Forward Voltage ³	$V_{GS}=0V, I_S=28A$	---	0.85	1.2	V
T_{rr}	Reverse Recovery Time	$T_j=25^{\circ}\text{C}, I_{sd}=28A,$ $V_{GS}=0V$	---	35	---	NS
Q_{rr}	Reverse Recovery Charge	$di/dt=500A/\mu\text{s}$	---	58	---	NC
I_S	Continuous Drain Current ²	$V_D=V_G=0V$	---	60	---	A
I_{SM}	Pulsed Drain Current		---	160	---	A

NOTES:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, $t \leq 10$ sec.
3. Pulse Test: Pulse Width $\leq 300\mu\text{s}$, Duty Cycle $\leq 2\%$.
4. Guaranteed by design, not subject to production
5. EAS condition: $T_j=25^\circ\text{C}$, $V_{\text{DD}}=50\text{V}$, $V_{\text{G}}=10\text{V}$, $R_{\text{g}}=25\Omega$, $L=1\text{mH}$, $I_{\text{AS}}=35\text{A}$

Typical Characteristics: ($T_c=25^\circ\text{C}$ unless otherwise noted)

Figure 1 Output Characteristics

Figure 4 $R_{\text{DS(on)}}$ -Junction Temperature

Figure 2 Transfer Characteristics

Figure 5 Gate Charge

Figure 3 $R_{\text{DS(on)}}$ - Drain Current

Figure 6 Source- Drain Diode Forward

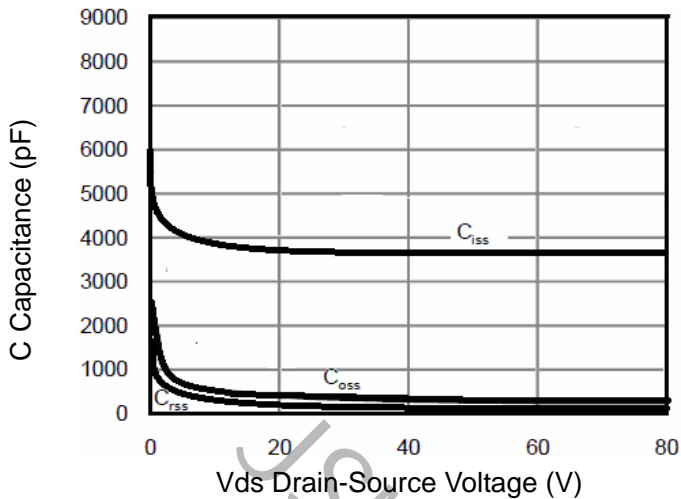


Figure 7 Capacitance vs Vds

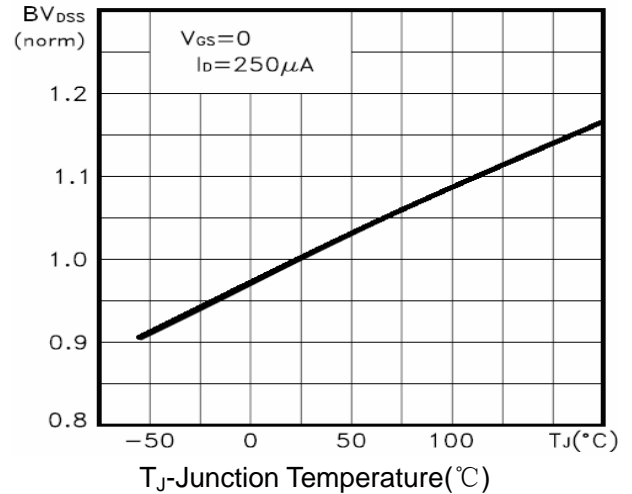


Figure 9 BV_{DSS} vs Junction Temperature

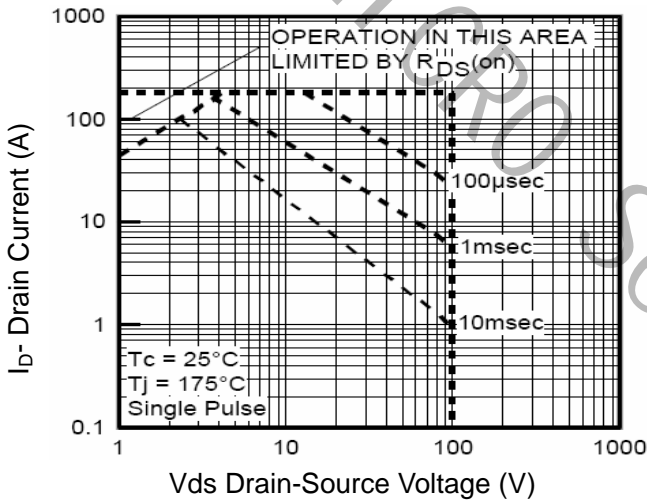


Figure 8 Safe Operation Area

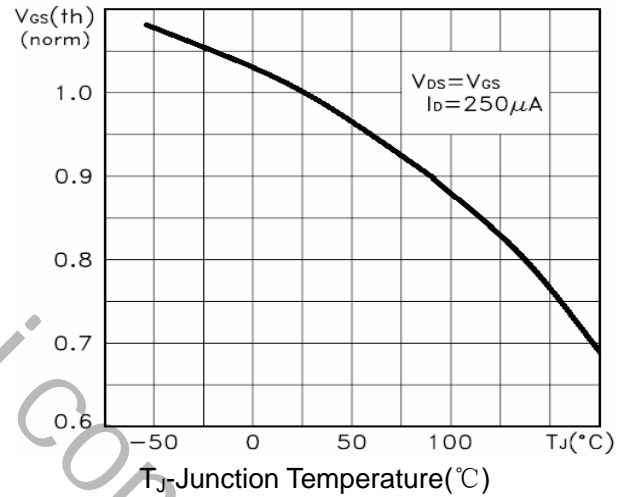


Figure 10 $V_{GS(th)}$ vs Junction Temperature

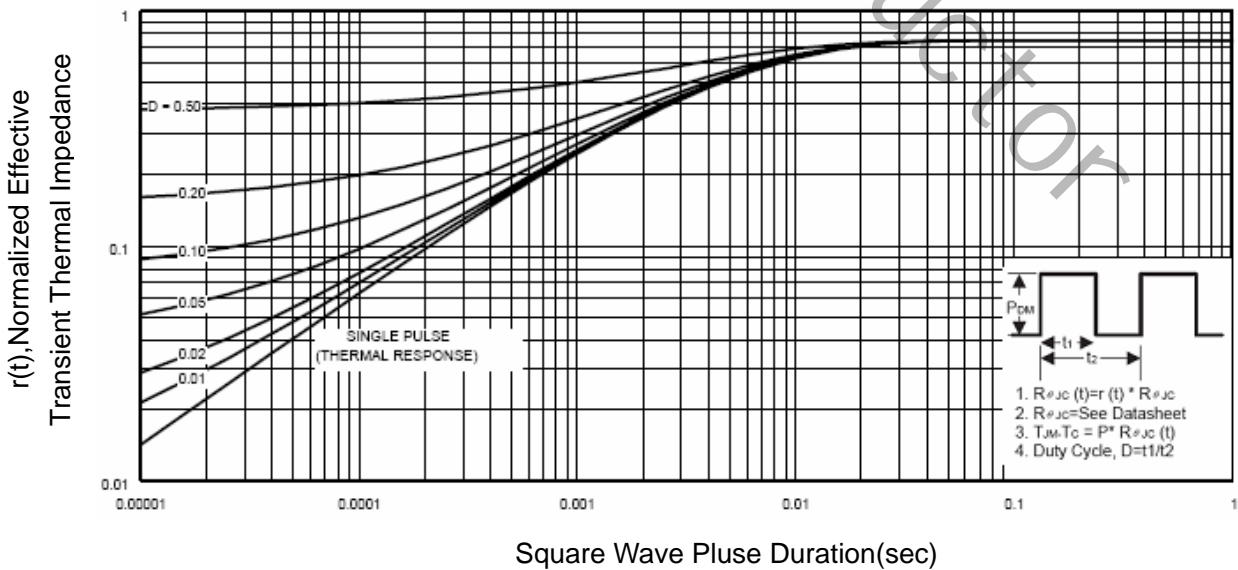


Figure 11 Normalized Maximum Transient Thermal Impedance