

EVVOSEMI[®]

THINK CHANGE DO



ESD



TVS



MOS



LDO



Diode



Sensor



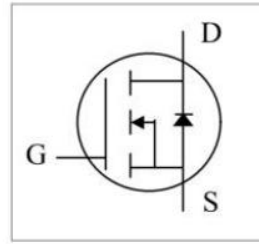
DC-DC

Product Specification

▶ Domestic	Part Number	IRL3713
▶ Overseas	Part Number	IRL3713
▶ Equivalent	Part Number	IRL3713

EV is the abbreviation of name EVVO

- ▼ Lower On- resistance
- ▼ Simple Drive Requirement
- ▼ Fast Switching Characteristic
- ▼ RoHS Compliant & Halogen-Free



BV_{dss}	30V
$R_{dS(ON)}$	3.5mΩ
I_h	150A

Description

IRL3713 series are from Advanced Power innovated design and silicon process technology to achieve the lowest possible on-resistance and fast switching performance. It provides the designer with an extreme efficient device for use in a wide range of power applications.

The TO-220 package is widely preferred for all commercial-industrial surface mount applications using infrared reflow technique and suited for high current application due to the low connection resistance.



Absolute Maximum Ratings@Tj=25°C(unless otherwise specified)

Symbol	Parameter	Rating	Units
V_{ds}	Drain-Source Voltage	30	V
V_{gs}	Gate-Source Voltage	+20	V
$I_{d@Tc=25^{\circ}C}$	Drain Current ⁴ , V_{GS} @ 10V	150	A
$I_{d@Tc=100^{\circ}C}$	Drain Current, V_{GS} @ 10V	84	A
I_{dm}	Pulsed Drain Current ¹	400	A
$P_{d@Tc=25^{\circ}C}$	Total Power Dissipation	120	W
E_{as}	Single pulse avalanche energy	350	mJ
T_j	Operating Junction Temperature Range	-55 to 150	°C
T_{stg}	Storage Temperature Range	-55 to 150	°C

Thermal Data

Symbol	Parameter	Value	Unit
R_{thj-c}	Maximum Thermal Resistance, Junction-case	1.3	°C/w
R_{thj-a}	Maximum Thermal Resistance, Junction-ambient (PCB mount) ³	62.5	°C/w

Electrical Characteristics@T_j=25°C(unless otherwise specified)

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250uA	30	-	-	V
R _{DS(ON)}	Static Drain-Source On-Resistance ²	V _{GS} =10V, I _D =60A	-	3	3.5	mΩ
		V _{GS} =4.5V, I _D =30A	-	-	6	mΩ
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =250uA	0.8	-	2	V
g _{fs}	Forward Transconductance	V _{DS} =10V, I _D =30A	-	55	-	S
I _{DSS}	Drain-Source Leakage Current	V _{DS} =24V, V _{GS} =0V	-	-	10	uA
I _{GSS}	Gate-Source Leakage	V _{GS} = ±20V, V _{DS} =0V	-	-	±100	nA
Q _g	Total Gate Charge	I _D =40A	-	60	96	nC
Q _{gs}	Gate-Source Charge	V _{DS} =24V	-	8.5		nC
Q _{gd}	Gate-Drain ("Miller") Charge	V _{GS} =4.5V	-	38		nC
t _{d(on)}	Turn-on Delay Time	V _{DS} =15V	-	14	-	ns
t _r	Rise Time	I _D =30A	-	83	-	ns
t _{d(off)}	Turn-off Delay Time	R _G =3.3Ω	-	66	-	ns
t _f	Fall Time	V _{GS} =10V	-	120	-	ns
C _{iss}	Input Capacitance	V _{GS} =0V	-	4090	6540	pF
C _{oss}	Output Capacitance	V _{DS} =25V	-	1010	-	pF
C _{rss}	Reverse Transfer Capacitance	f=1.0MHz	-	890	-	pF

Source-Drain Diode

Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Units
V _{SD}	Forward On Voltage ²	I _S =45A, V _{GS} =0V	-	-	1.3	V
t _{rr}	Reverse Recovery Time	I _S =30A, V _{GS} =0V,	-	51	-	ns
Q _{rr}	Reverse Recovery Charge	dI/dt=100A/μs	-	63	-	nC

Notes:

- 1.Pulse width limited by Max. junction temperature.
- 2.Pulse test
- 3.Surface mounted on 1 in² copper pad of FR4 board
- 4.Package limitation current is 150A.

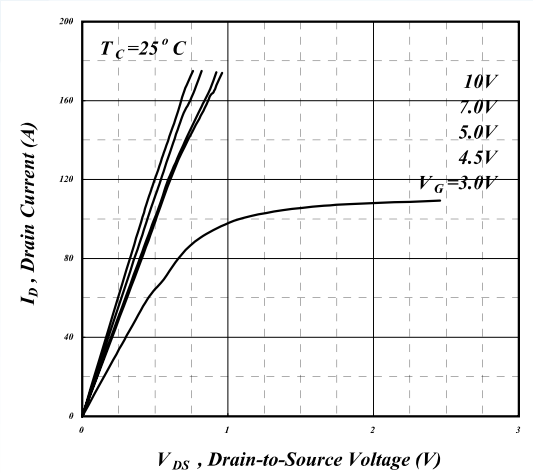


Fig 1. Typical Output Characteristics

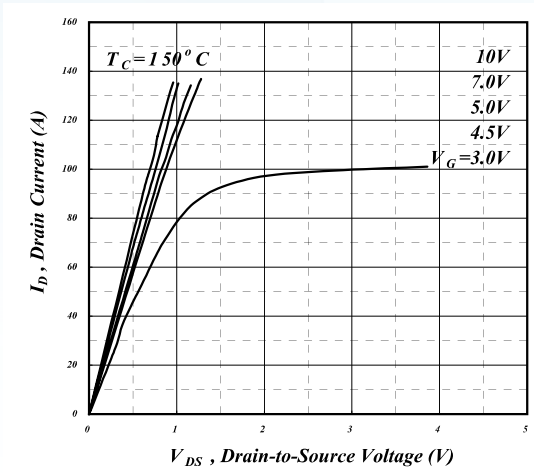


Fig 2. Typical Output Characteristics

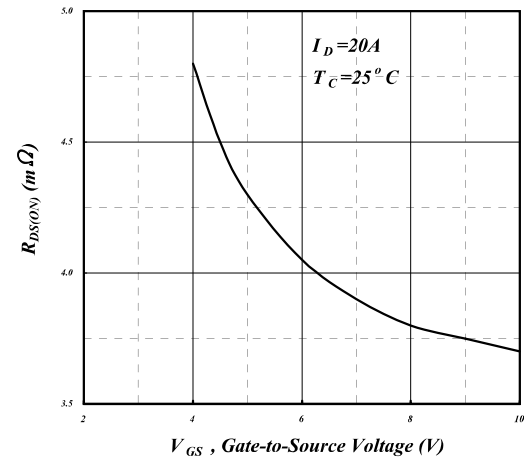


Fig 3. On-Resistance v.s. Gate Voltage

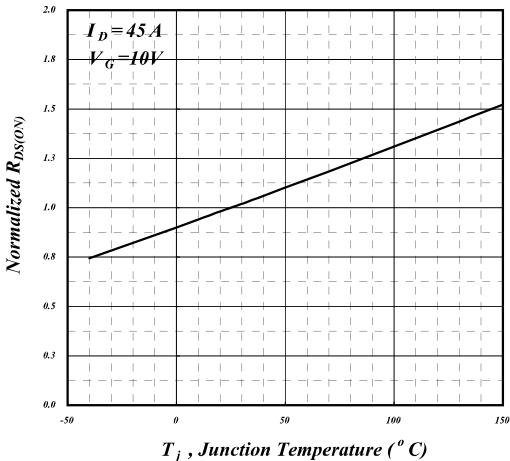


Fig 4. Normalized On-Resistance
v.s. Junction Temperature

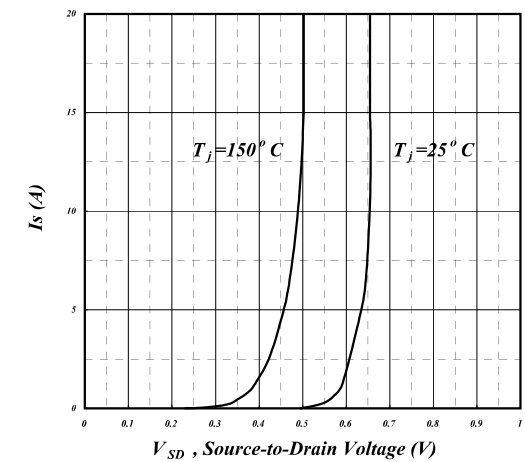


Fig 5. Forward Characteristic of
Reverse Diode

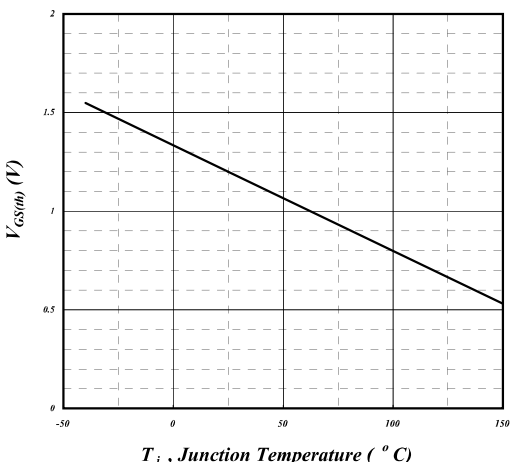


Fig 6. Gate Threshold Voltage v.s.
Junction Temperature

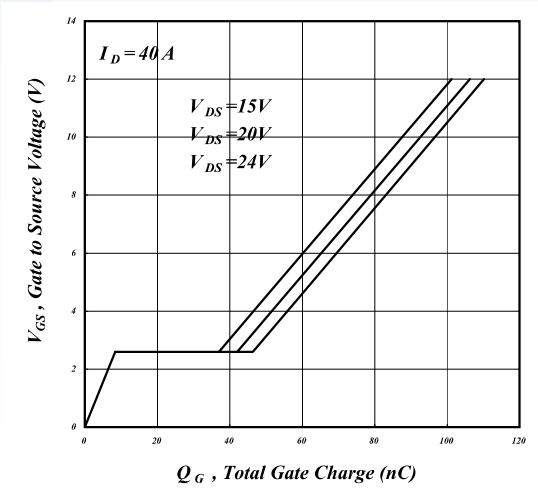


Fig 7. Gate Charge Characteristics

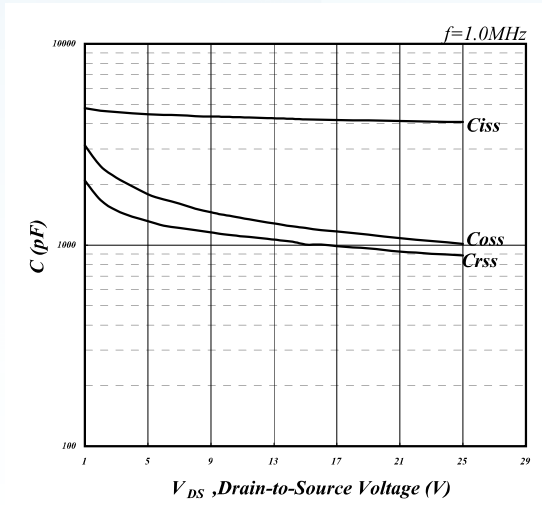


Fig 8. Typical Capacitance Characteristics

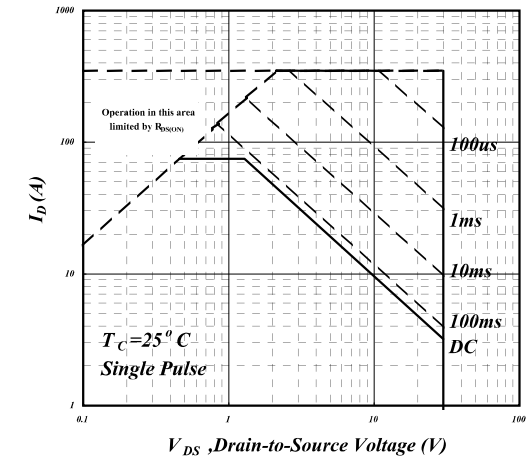


Fig 9. Maximum Safe Operating Area

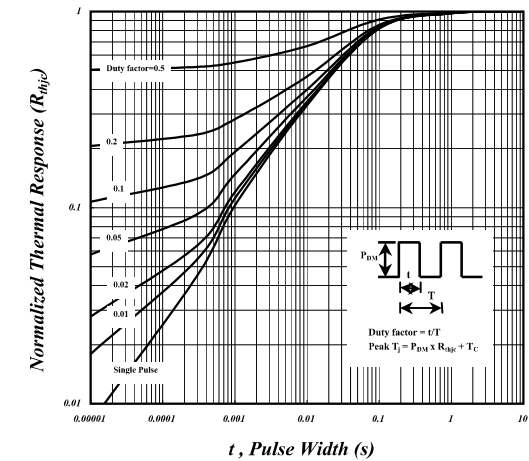


Fig 10. Effective Transient Thermal Impedance

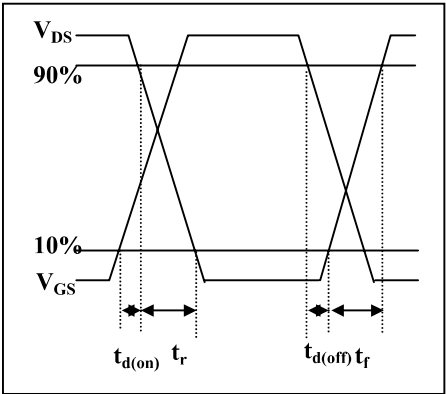


Fig 11. Switching Time Waveform

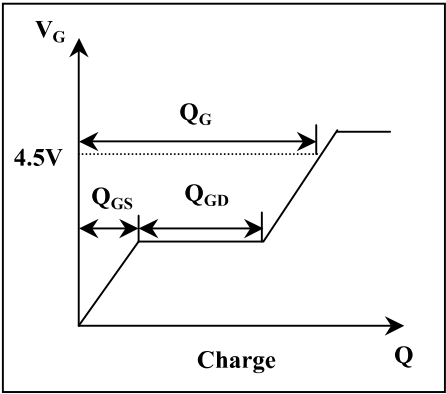


Fig 12. Gate Charge Waveform

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