

EVVOSEMI[®]

THINK CHANGE DO



ESD



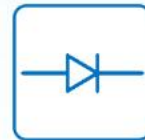
TVS



MOS



LDO



Diode



Sensor



DC-DC

Product Specification

▶ Domestic	Part Number	IRFP4332
▶ Overseas	Part Number	IRFP4332
▶ Equivalent	Part Number	IRFP4332

EV is the abbreviation of name EVVO

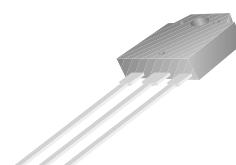
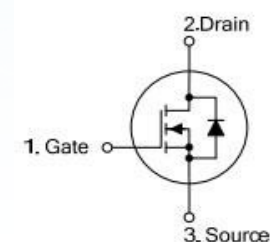
Silicon N-Channel Power MOSFET

Description

IRFP4332, the silicon N-channel Enhanced MOSFETs, is obtained by advanced MOSFET technology which reduce the conduction loss, improve switching performance and enhance the avalanche energy. The transistor is suitable device for SMPS, high speed switching and general purpose applications.

General Features

- ① $V_{DS}=250V$, $R_{ds(on)} < 35m\Omega$ @ $V_{GS}=10V$, $I_D=90A$ (Typ: $26m\Omega$)
- ② Fast Switching
- ③ Low C_{rss}
- ④ 100% avalanche tested
- ⑤ Improved dv/dt capability
- ⑥ RoHS product



Application

- ① High frequency switching mode power supply

ABSOLUTE RATINGS

at $T_C = 25^\circ C$, unless otherwise specified

Symbol	Parameter	Rating	Units
V_{DSS}	Drain-to-Source Voltage	250	V
I_D	Continuous Drain Current	90	A
	Continuous Drain Current $T_C = 100^\circ C$	73	A
I_{DM}	Pulsed Drain Current(Note1)	360	A
V_{GS}	Gate-to-Source Voltage	± 30	V
E_{AS}	Single Pulse Avalanche Energy(Note2)	4200	mJ
$d_{v/dt}$	Peak Diode Recovery dv/dt (Note3)	5.0	V/ns
P_D	Power Dissipation	830	W
	Derating Factor above $25^\circ C$	6.7	W/ $^\circ C$
T_J, T_{stg}	Operating Junction and Storage Temperature Range	150, -55 to 150	$^\circ C$
T_L	Maximum Temperature for Soldering	300	$^\circ C$

Thermal characteristics

Symbol	Parameter	RATINGS	Units
R θ JC	Junction-to-Case	0.15	°C/W
R θ JA	Junction-to-Ambient	62.5	°C/W

Electrical Characteristics

at T_C = 25°C, unless otherwise specified

OFF Characteristics						
Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
V _{DSS}	Drain to Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	250	--	--	V
ΔB _{V_{DSS}} /ΔT _J	Bvdss Temperature Coefficient	I _D =250uA, Reference 25°C	--	0.2	--	V/°C
I _{DSS}	Drain to Source Leakage Current	V _{DS} = 250V, V _{GS} = 0V, T _j = 25°C	--	--	10	μA
		V _{DS} = 200V, V _{GS} = 0V, T _j = 125°C	--	--	100	μA
I _{GSS(F)}	Gate to Source Forward Leakage	V _{GS} = +30V	--	--	100	nA
I _{GSS(R)}	Gate to Source Reverse Leakage	V _{GS} = -30V	--	--	-100	nA

ON Characteristics						
Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
R _{DS(ON)}	Drain-to-Source On- Resistance	V _{GS} =10V, I _D =45A(Note4)	--	26	35	mΩ
V _{GS(TH)}	Gate Threshold Voltage	V _{DS} = V _{GS} , I _D = 250μA(Note4)	2.0	--	4.0	V

Dynamic Characteristics						
Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
R _g	Gate resistance	f = 1.0MHz	--	1.1	--	Ω
C _{iss}	Input Capacitance	V _{GS} = 0V V _{DS} = 25V f = 1.0MHz	--	9650	--	PF
C _{oss}	Output Capacitance		--	930	--	
C _{rss}	Reverse Transfer Capacitance		--	42	--	

Switching Characteristics						
Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
$t_{d(ON)}$	Turn-on Delay Time	$I_D = 45A$ $V_{DD} = 125V$ $V_{GS} = 10V$ $R_G = 1\Omega$	--	51	--	ns
t_r	Rise Time		--	174	--	
$t_{d(OFF)}$	Turn-Off Delay Time		--	40	--	
t_f	Fall Time		--	162	--	
Q_g	Total Gate Charge	$I_D = 90A$ $V_{DD} = 200V$ $V_{GS} = 10V$	--	148	--	nC
Q_{gs}	Gate to Source Charge		--	36	--	
Q_{gd}	Gate to Drain ("Miller") Charge		--	55	--	

Source-Drain Diode Characteristics						
Symbol	Parameter	Test Conditions	Values			Units
			Min.	Typ.	Max.	
I_S	Continuous Source Current (Body Diode)	$T_C = 25^\circ C$	--	--	90	A
I_{SM}	Maximum Pulsed Current (Body Diode)		--	--	360	A
V_{SD}	Diode Forward Voltage	$I_S = 90A, V_{GS} = 0V$ (Note4)	--	--	1.2	V
T_{rr}	Reverse Recovery Time	$I_S = 45A,$ $T_J = 25^\circ C$ $dI_F/dt = 100A/\mu s, V_{GS} = 0V$	--	260	--	ns
Q_{rr}	Reverse Recovery Charge		--	2950	--	nC

Note1: Pulse width limited by maximum junction temperature

Note2: $L = 10mH, V_{DS} = 50V, \text{Start } T_J = 25^\circ C$

Note3: $I_{SD} = 90A, di/dt \leq 100A/\mu s, V_{DD} \leq BV_{DS}, \text{Start } T_J = 25^\circ C$

Note4: Pulse width $t_p \leq 300\mu s, \delta \leq 2\%$

Characteristics Curves

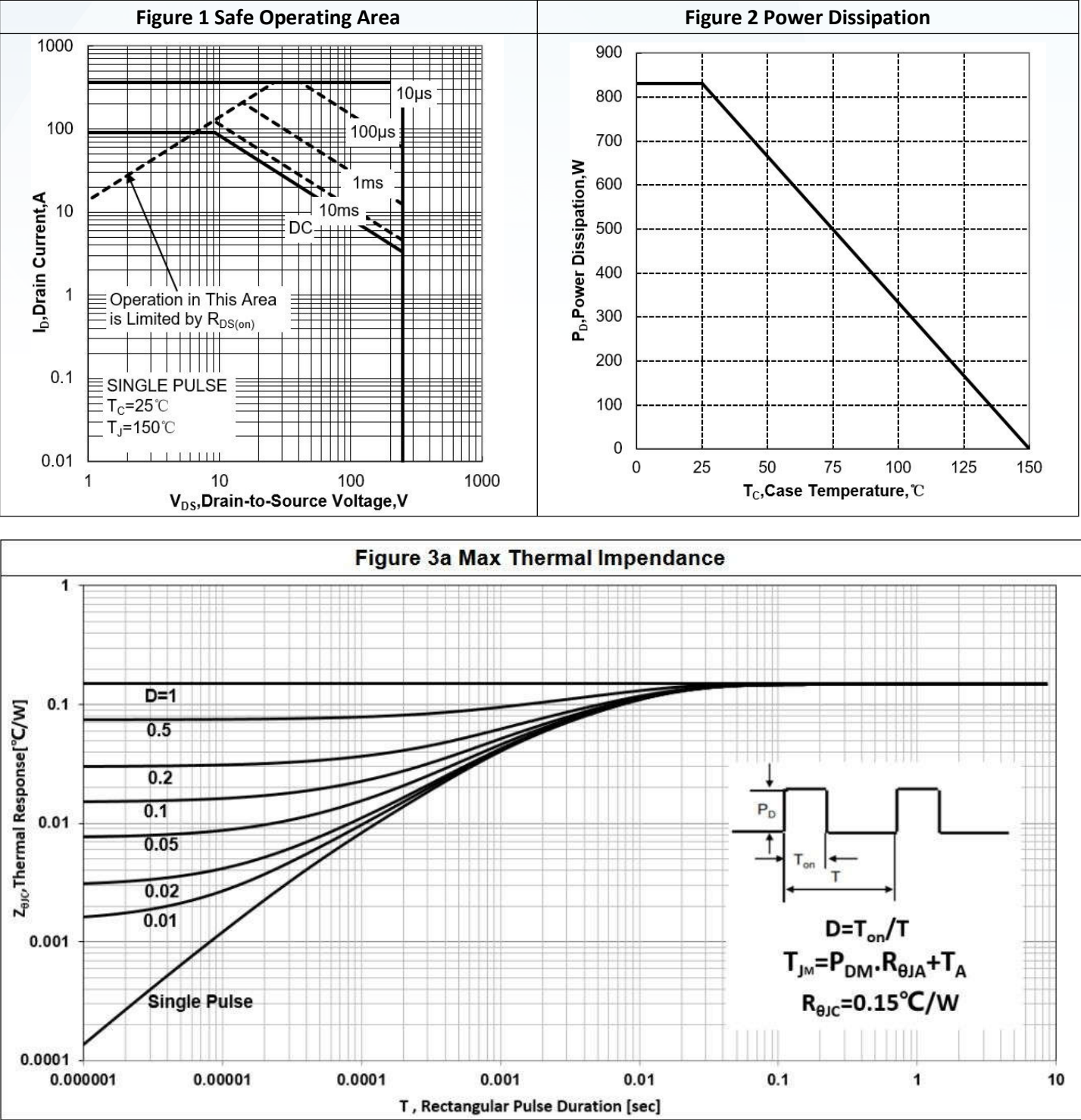


Figure 4 Typical Output Characteristics

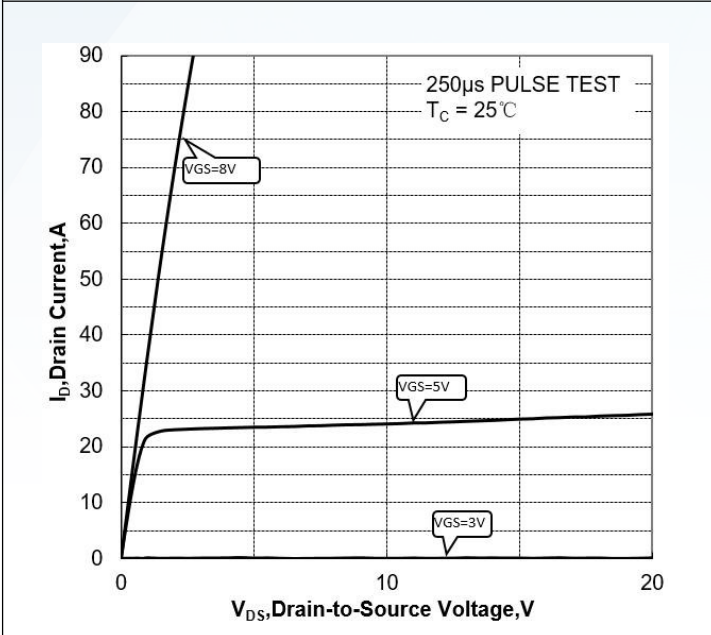


Figure 5 Typical Transfer Characteristics

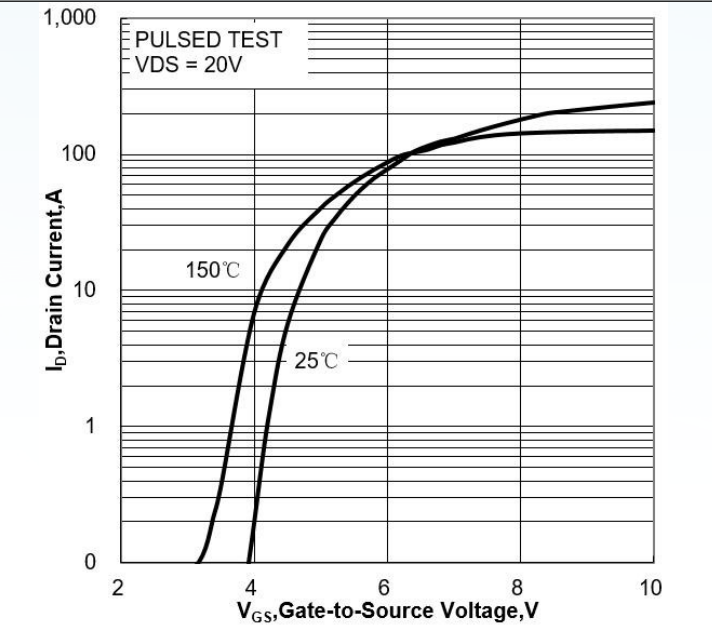


Figure 6 Typical Drain to Source ON Resistance vs Drain Current

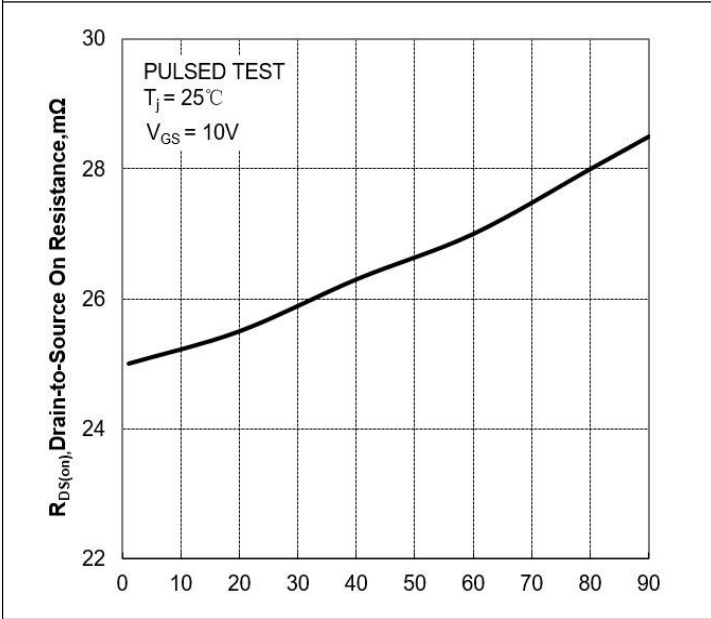


Figure 7 Typical Drian to Source on Resistance vs Junction Temperature

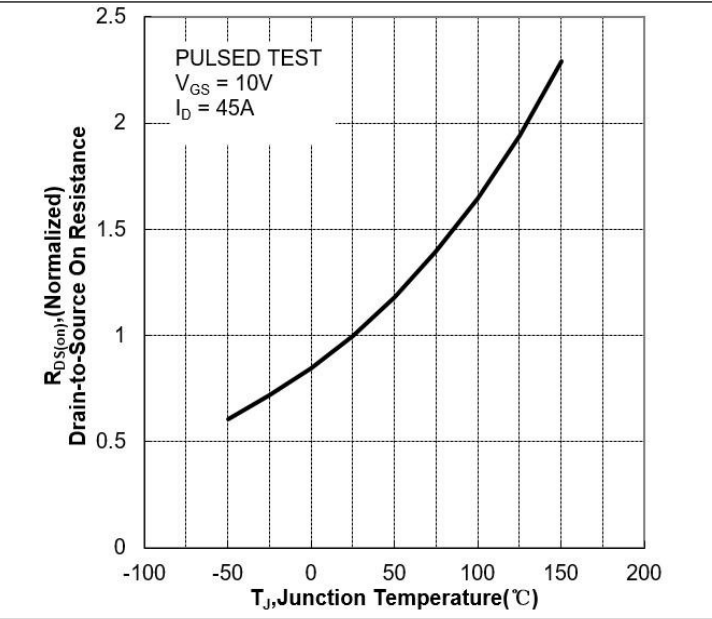


Figure 8 Typical Theshold Voltage vs Junction Temperature

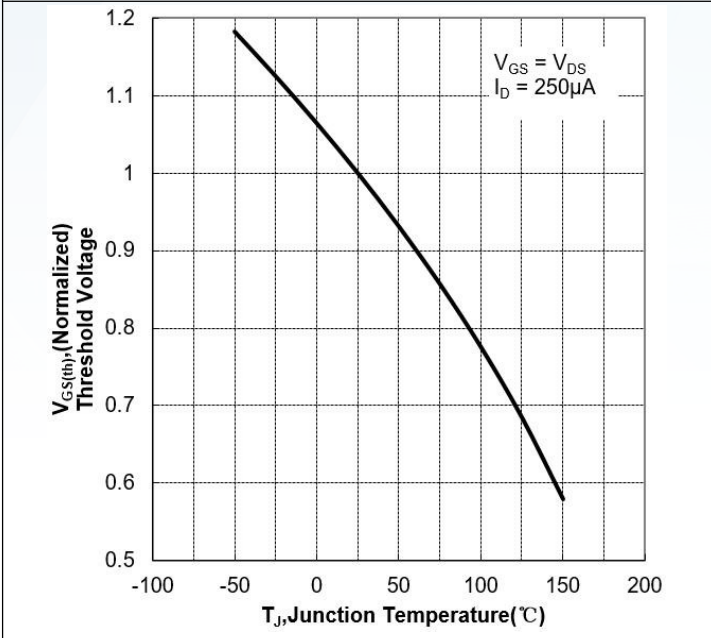


Figure 9 Typical Breakdown Voltage vs Junction Temperature

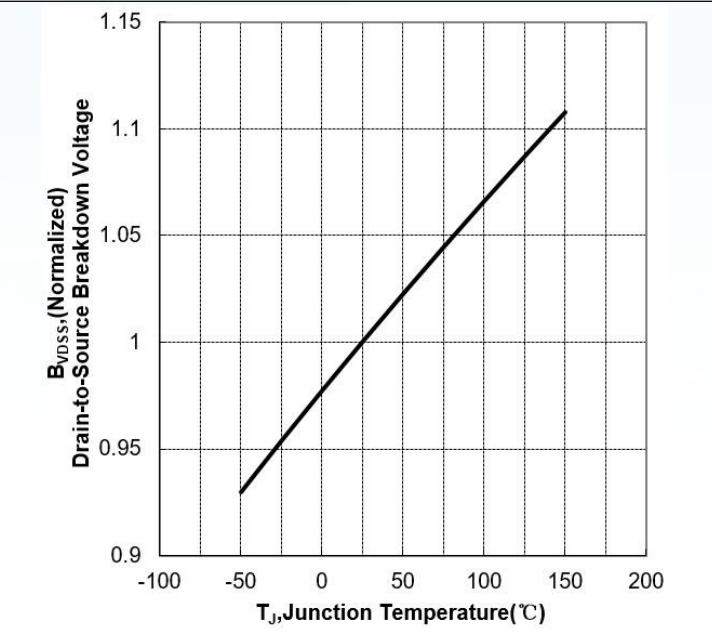


Figure 10 Typical Theshold Voltage vs Junction Temperature

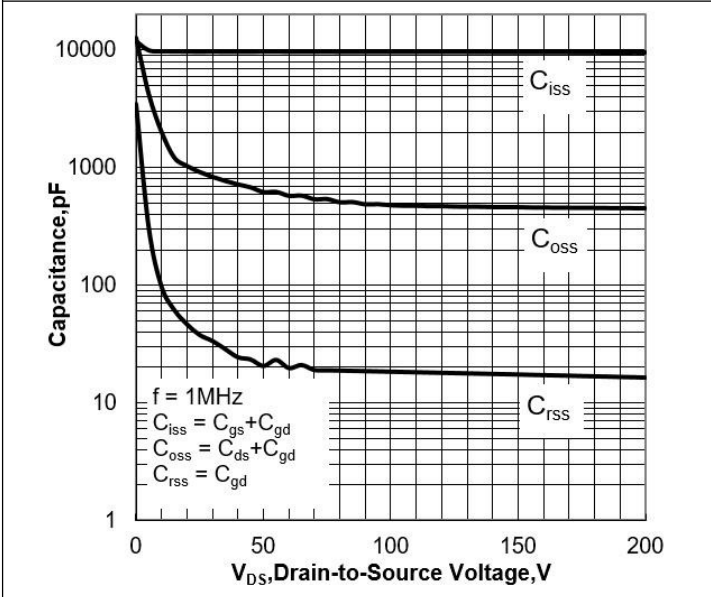
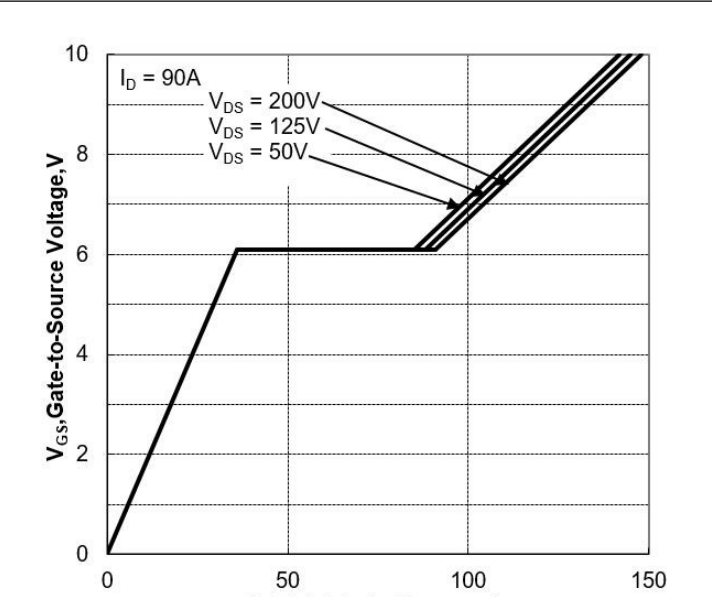


Figure 11 Typical Breakdown Voltage vs Junction Temperature



Test Circuit and Waveform

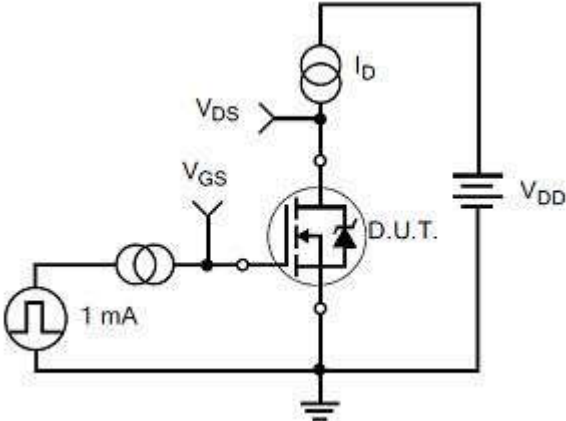
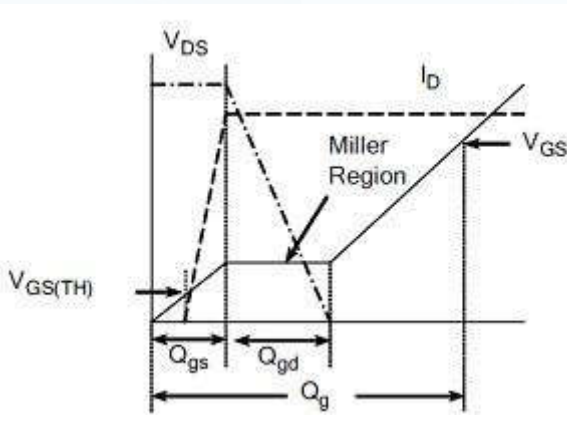
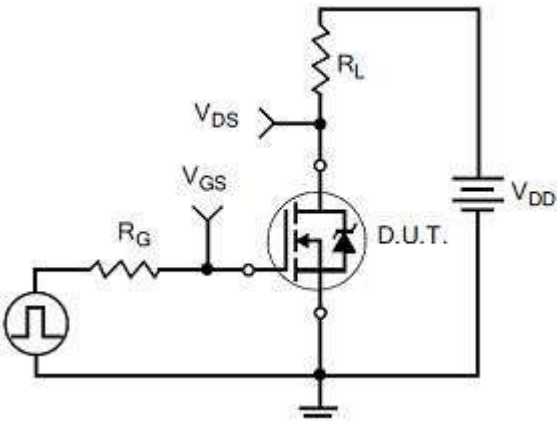
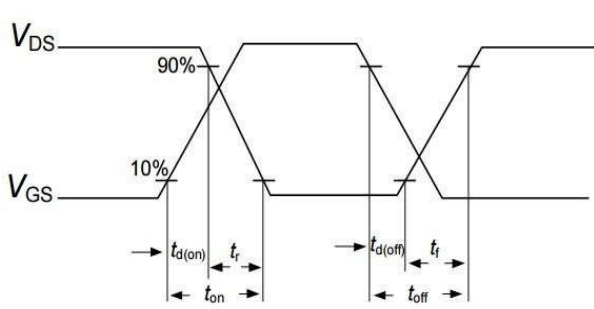
Figure 12 Gate Charge Test Circuit 	Figure 13 Gate Charge Waveforms 
Figure 14 Resistive Switching Test Circuit 	Figure 15 Resistive Switching Waveforms 

Figure 16 Diode Reverse Recovery Test Circuit

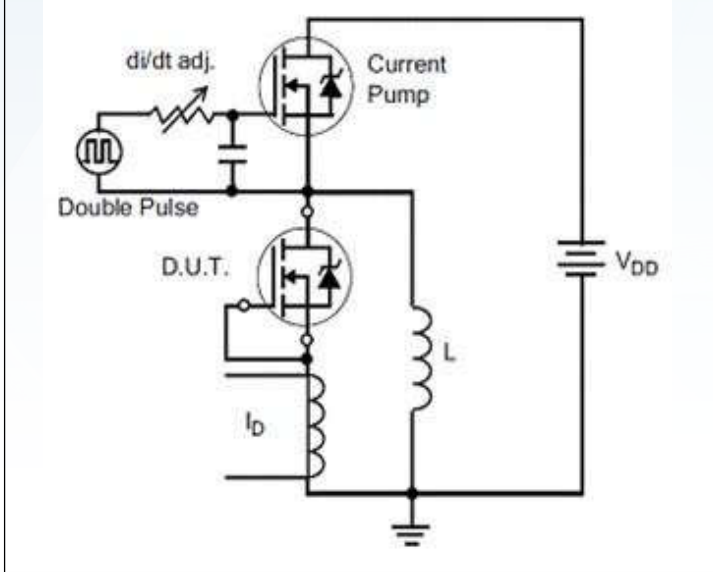


Figure 17 Diode Reverse Recovery Waveform

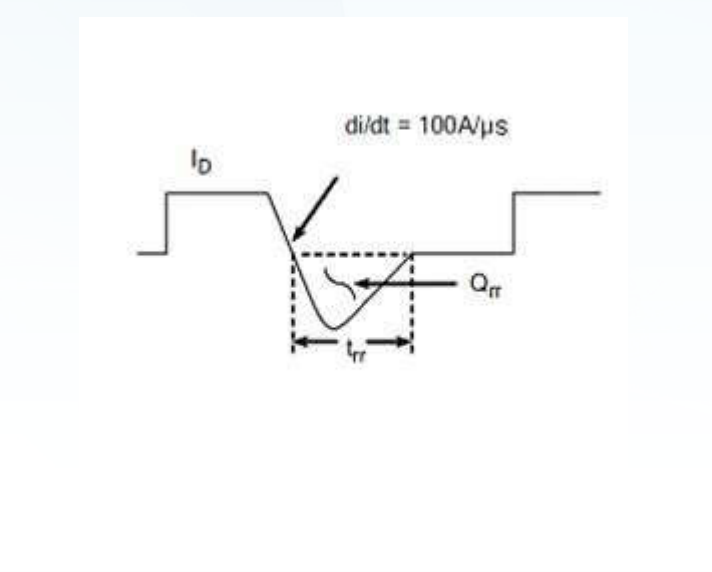


Figure 18 Unclamped Inductive Switching Test

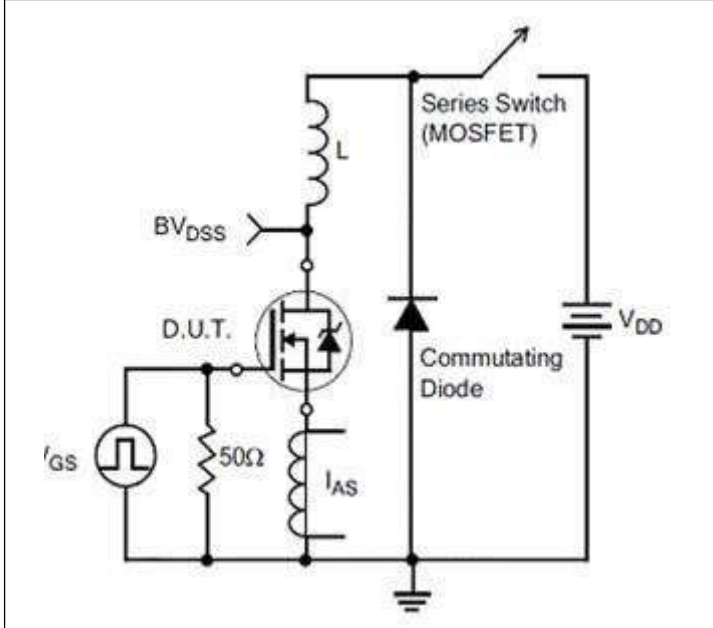
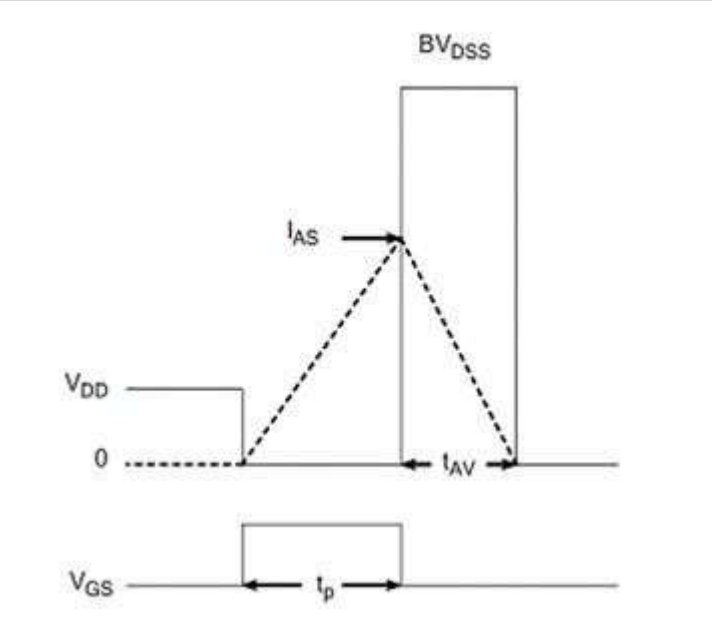


Figure 19 Unclamped Inductive Switching



Disclaimer

EVVOSEMI ("EVVO") reserves the right to make corrections, enhancements, improvements, and other changes to its products and services at any time, and to discontinue any product or service without notice.

EVVO warrants the performance of its hardware products to the specifications applicable at the time of sale in accordance with its standard warranty. Testing and other quality control techniques are used as deemed necessary by EVVO to support this warranty. Except where mandated by government requirements, testing of all parameters of each product is not necessarily performed.

Customers should obtain and confirm the latest product information and specifications before final design, purchase, or use. EVVO makes no warranty, representation, or guarantee regarding the suitability of its products for any particular purpose, nor does EVVO assume any liability for application assistance or customer product design. EVVO does not warrant or accept any liability for products that are purchased or used for any unintended or unauthorized application.

EVVO products are not authorized for use as critical components in life support devices or systems without the express written approval of EVVOSEMI.

The EVVO logo and EVVOSEMI are trademarks of EVVOSEMI or its subsidiaries in relevant jurisdictions. EVVO reserves the right to make changes without further notice to any products herein.