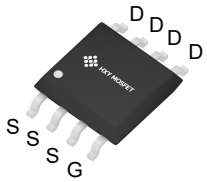
Description

The IRF9335 uses advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation with gate voltages as low as 2.5V. This device is suitable for use as a Battery protection or in other Switching application.

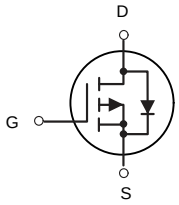


SOP-8

General Features

V_{DS} =-30V I_D = -5.1A

$R_{DS(ON)}$ < 55mΩ @ V_{GS}=10V



P-Channel MOSFET

Application

Battery protection

Load switch

Uninterruptible power supply

Ordering Information

Product ID	Pack	Brand	Qty(PCS)
IRF9335	SOP-8	HXY MOSFET	3000

Absolute Maximum Ratings (Tc=25℃ unless otherwise noted)

Symbol	Parameter	Rating	Units
V_{DS}	Drain-Source Voltage	- 30	V
VGS	Gate-Source Voltage	±20	V
I_D@T_A=25℃	Drain Current , V_{GS} @ 10V	-5.1	A
IDM	Pulsed Drain Current	-20.4	A
P_D@T_A=25℃	Total Power Dissipation	2.5	W
TSTG	Storage Temperature Range	-55 to 150	℃
T_J	Operating Junction Temperature Range	-55 to 150	℃
Rthj-a	Maximum Thermal Resistance, Junction-ambient	58	℃/W

Electrical Characteristics (T_A=25℃unless otherwise noted)

Symbol	Parameter	Test Condition	Min.	Typ.	Max.	Units
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D= -250μA	-30	-	-	V
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} = -30V, V_{GS} = 0V,	-	-	-1	μA
I_{GSS}	Gate to Body Leakage Current	V_{DS} =0V, V_{GS} = ±20V	-	-	±100	nA
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}= V_{GS}, I_D= -250μA	-1.0	-1.6	-2.5	V
$R_{DS(on)}$	Static Drain-Source on-Resistance note2	V_{GS} =-10V, I_D =-5A	-	43	55	mΩ
		V_{GS} =-4.5V, I_D =-4A	-	65	90	
C_{iss}	Input Capacitance	V_{DS} = -15V, V_{GS} = 0V, f = 1.0MHz	-	596	-	pF
C_{oss}	Output Capacitance		-	95	-	pF
C_{rss}	Reverse Transfer Capacitance		-	68	-	pF
Q_g	Total Gate Charge	V_{DS}= -15V, I_D = -5.1A, V_{GS} = -10V	-	6.8	-	nC
Q_{gs}	Gate-Source Charge		-	1	-	nC
Q_{gd}	Gate-Drain(“Miller”) Charge		-	1.4	-	nC
$t_{d(on)}$	Turn-on Delay Time	V_{DD} = -15V, I_D = -1A, V_{GS}=-10V, R_{GEN}=2.5Ω	-	14	-	ns
t_r	Turn-on Rise Time		-	61	-	ns
$t_{d(off)}$	Turn-off Delay Time		-	19	-	ns
t_f	Turn-off Fall Time		-	10	-	ns
I_S	Maximum Continuous Drain to Source Diode Forward Current		-	-	-5.1	A
I_{SM}	Maximum Pulsed Drain to Source Diode Forward Current		-	-	-20.4	A
V_{SD}	Drain to Source Diode Forward Voltage	V_{GS} = 0V, I_S = -5.1A	-	-0.8	-1.2	V

Notes:1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature

2. Pulse Test: Pulse Width≤300μs, Duty Cycle≤2%

Typical Electrical and Thermal Characteristics

Figure1: Output Characteristics

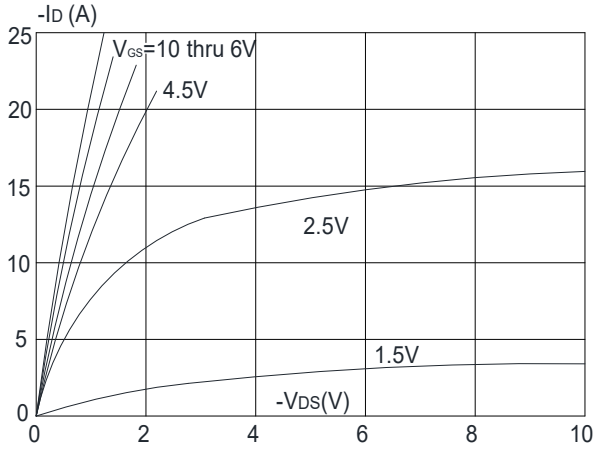


Figure 2: Typical Transfer Characteristics

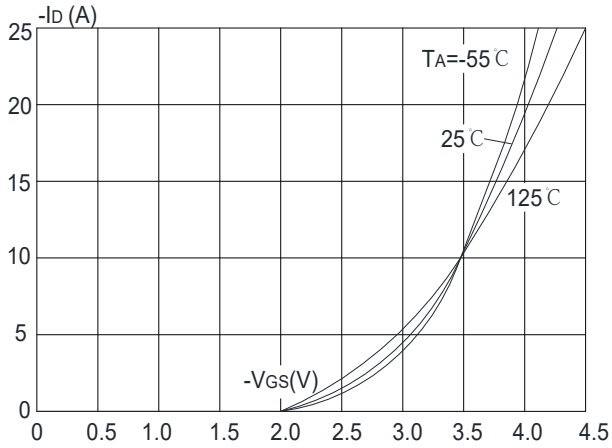


Figure 3: On-resistance vs. Drain Current

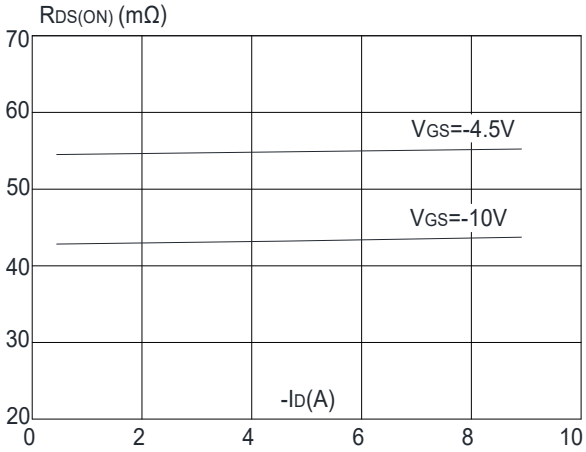


Figure 4: Body Diode Characteristics

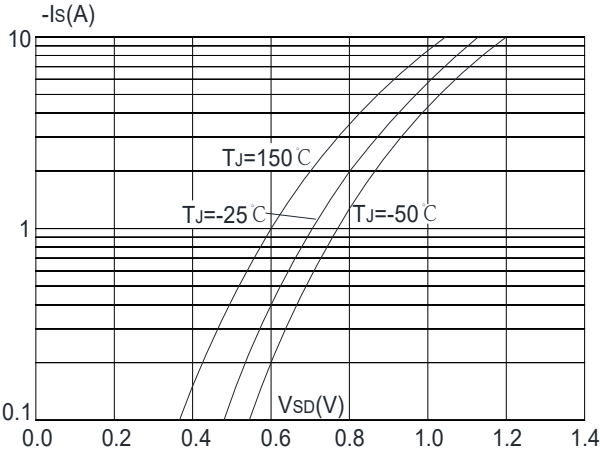


Figure 5: Gate Charge Characteristics

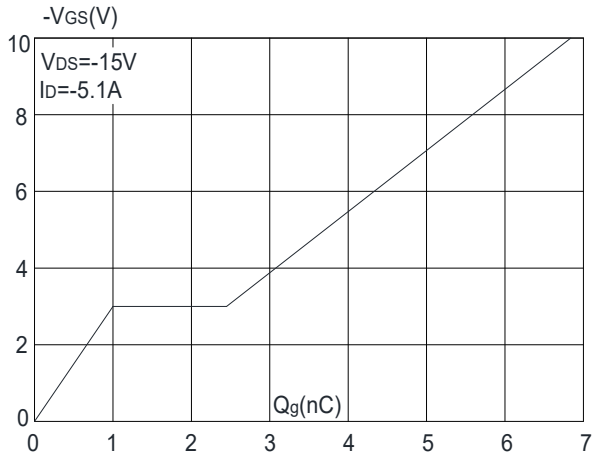


Figure 6: Capacitance Characteristics

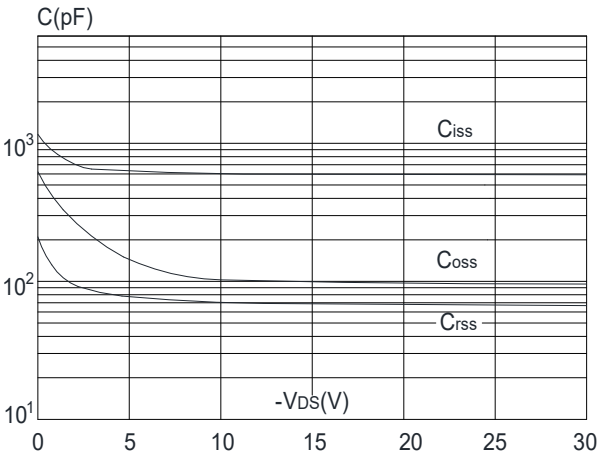


Figure 7: Normalized Breakdown Voltage vs. Junction Temperature

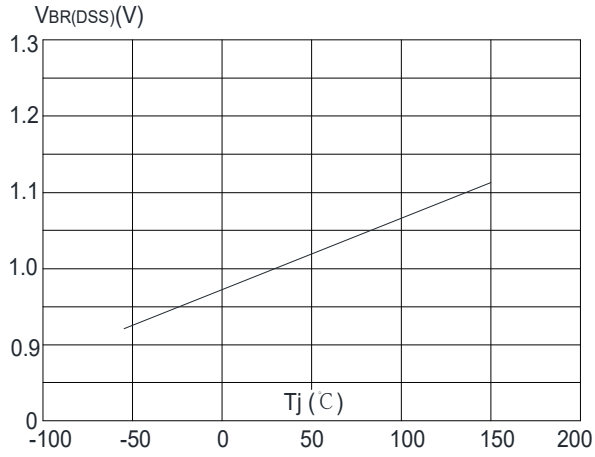


Figure 8: Normalized on Resistance vs. Junction Temperature

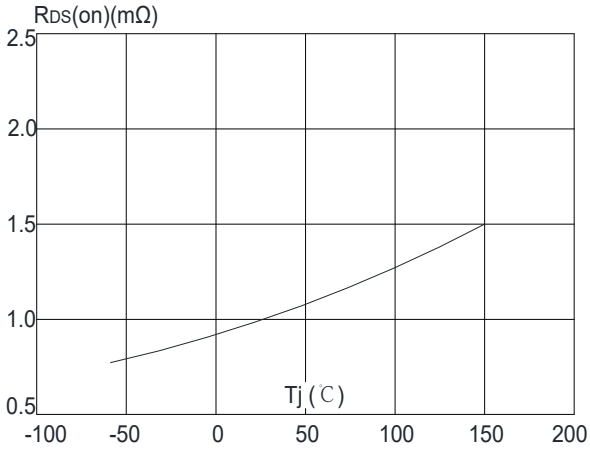


Figure 9: Maximum Safe Operating Area

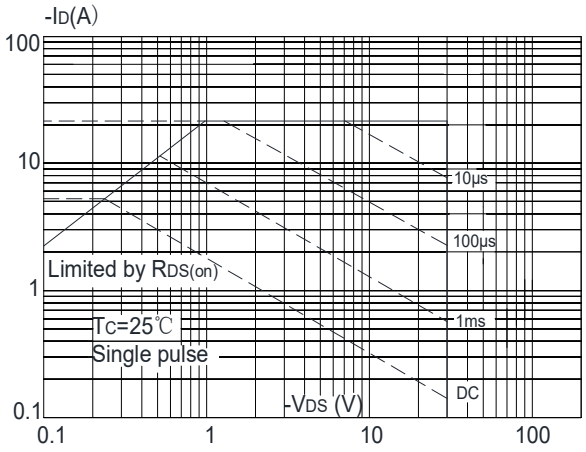


Figure 10: Maximum Continuous Drain Current vs. Case Temperature

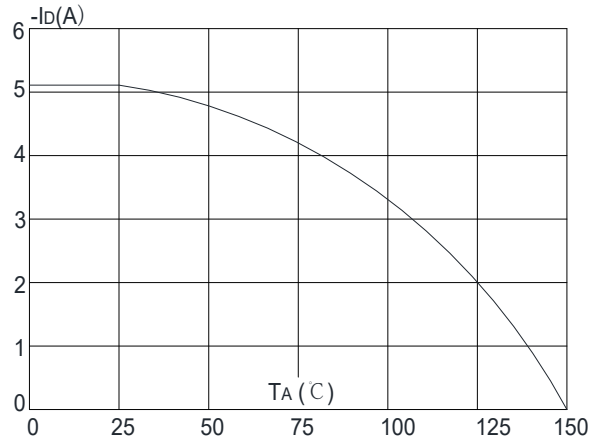
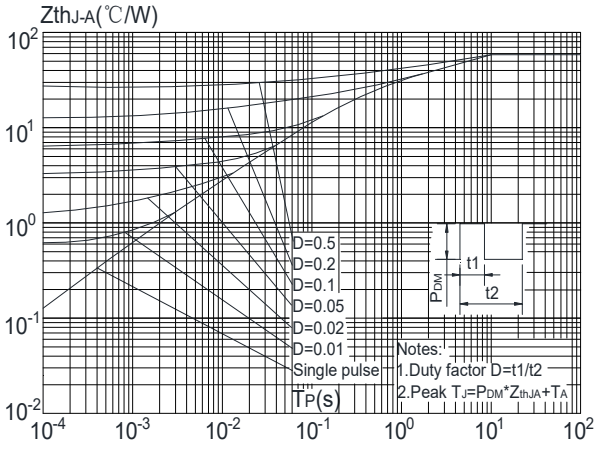
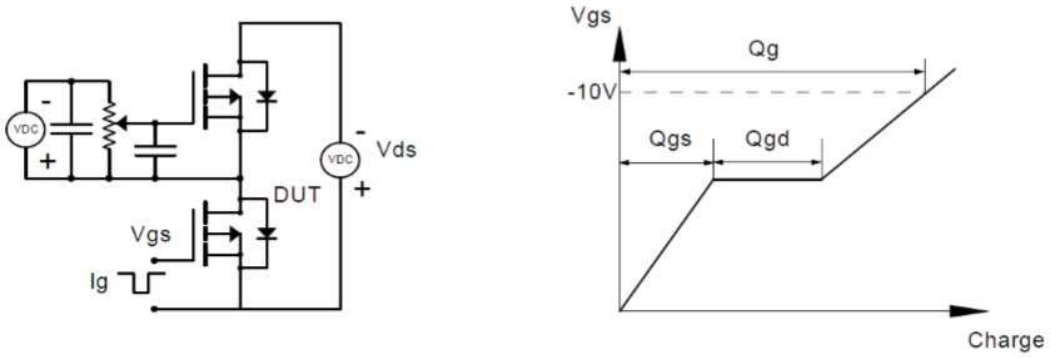


Figure.11: Maximum Effective Transient Thermal Impedance, Junction-to-Ambient

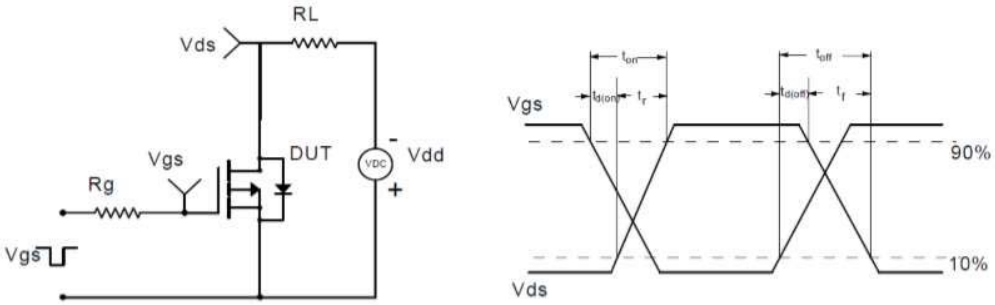


Typical Performance Characteristics

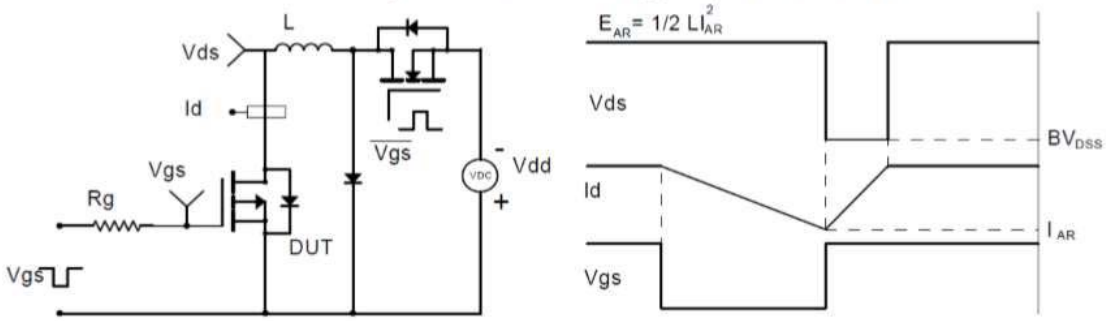
Gate Charge Test Circuit & Waveform



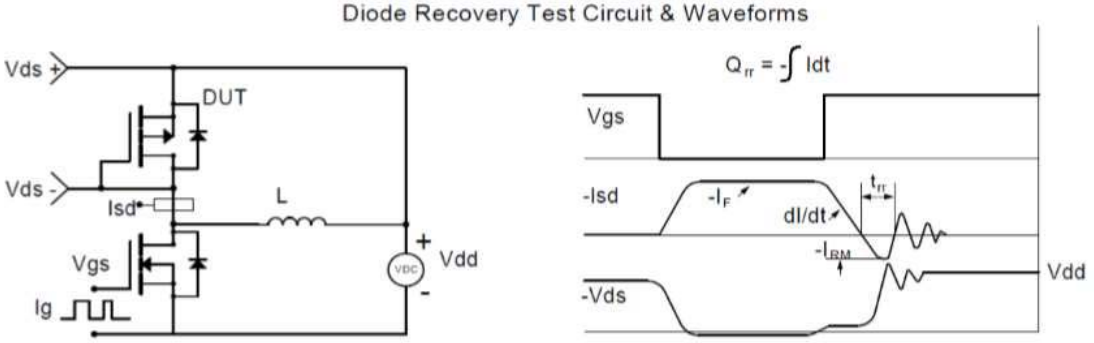
Resistive Switching Test Circuit & Waveforms



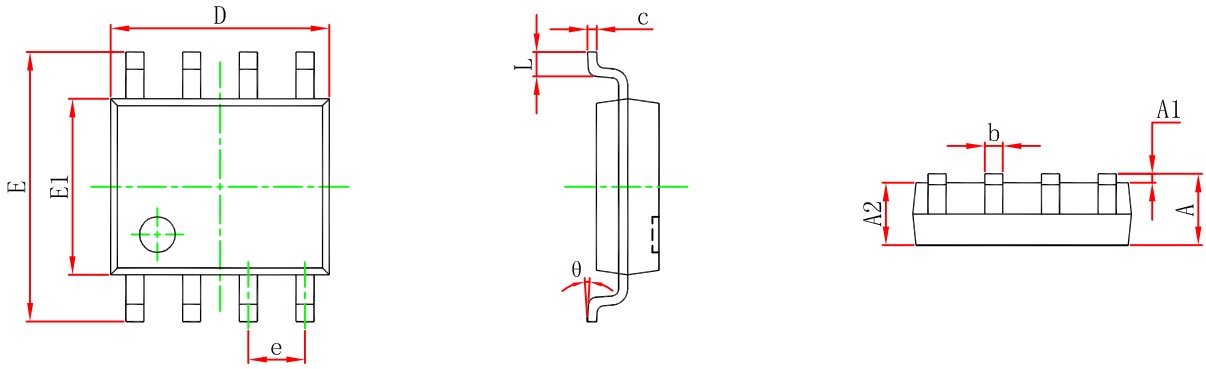
Unclamped Inductive Switching (UIS) Test Circuit & Waveforms



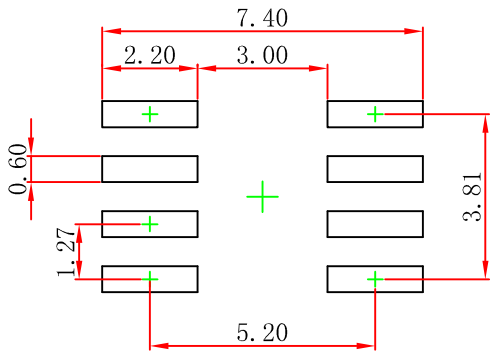
Diode Recovery Test Circuit & Waveforms



SOP-8 Package Outline Dimensions



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	**Max**	**Min**	**Max**
A	1.350	1.750	0.053	0.069
A1	0.100	0.250	0.004	0.010
A2	1.350	1.550	0.053	0.061
b	0.330	0.510	0.013	0.020
c	0.170	0.250	0.007	0.010
D	4.800	5.000	0.189	0.197
e	1.270 (BSC)		0.050 (BSC)	
E	5.800	6.200	0.228	0.244
E1	3.800	4.000	0.150	0.157
L	0.400	1.270	0.016	0.050
θ	0°	8°	0°	8°



Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

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