Single N-Channel, 45V, 130A, Power MOSFET

Features

- ✧ High density cell design for Low $R_{DS(on)}$
- ✧ Green device available
- ✧ Small package : DFN5x6
- ✧ Low $R_{DS(ON)}$

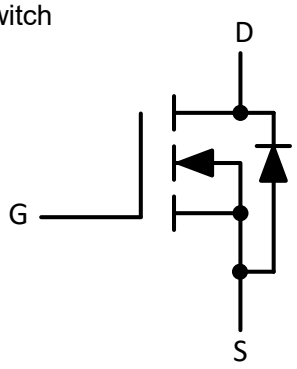
V_{DS} (V)	Typical $R_{DS(on)}$ (mΩ)
45	1.1 @ V_{GS}=10V

Applications

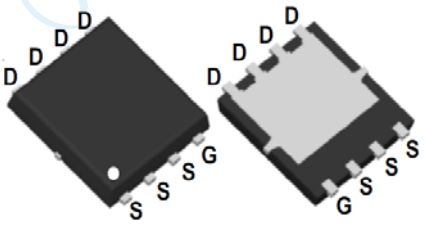
- ✧ High current load applications
- ✧ Load switch for portable devices
- ✧ Battery Switch

Mechanical Data

- ✧ UL Flame Rating : UL94V-0
- ✧ RoHS/WEEE Compliant



Circuit Diagram



DFN5x6

Absolute Maximum Rating at T_A = 25 °C, unless otherwise specified

Parameter		Symbol	Value	Units
Drain-Source Voltage		V_{DS}	45	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current@ 10V	T_C=25 ℃	I_D	130	A
	T_C=100℃		91	
Power Dissipation	T_C=25 ℃	P_D	240	W
Thermal Resistance from Junction to Ambient		$R_{\theta JA}$	50	℃/W
Junction Temperature		T_J	150	℃
Storage Temperature		T_{STG}	-55~ +150	℃

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Electrical Characteristics at T_A = 25 °C, unless otherwise specified

Symbol	Parameter	Conditions	Min	Typ	Max	Units
STATIC PARAMETERS						
BV_{DSS}	Drain-Source Breakdown Voltage	I_D=250μA, V_{GS}=0V	45	-	-	V
I_{DSS}	Drain-to-Source Leakage Current	V_{DS}=45V, V_{GS}=0V	-	-	1	μA
		V_{DS}=45V, V_{GS}=0V,T_J=125℃	-	-	100	μA
I_{GSS}	Gate 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	1.5	2.5	V
$R_{DS(ON)}$	Static Drain-Source On-Resistance	V_{GS}=10V, I_D=20A	-	1.1	1.5	mΩ
g_{fs}	Forward Transconductance	V_{DS}=10V, I_D=10A	-	60	-	S
DYNAMIC PARAMRTERS						
C_{iss}	Input Capacitance	V_{DS}=20V, V_{GS}=0V, f=1.0MHz	-	5332	-	pF
C_{oss}	Output Capacitance		-	2120	-	pF
C_{rss}	Reverse Transfer Capacitance		-	92	-	pF
SWITCHING PARAMETERS						
$t_{d(on)}$	Turn On Delay Time	V_{DS} =15 V, I_D = 65 A, V_{GS} = 10 V, R_G = 1.6 Q	-	12	-	ns
t_r	Rising Time		-	48	-	ns
$t_{d(off)}$	Turn Off Delay Time		-	24	-	ns
t_f	Fall Time		-	9.2	-	ns
Q_g	Total Gate Charge	V_{GS}=10V, V_{DS}=20V, I_D=65A	-	84	-	nC
Q_{gs}	Gate Source Charge		-	30	-	nC
Q_{gd}	Gate Drain Charge		-	17	-	nC
T_{rr}	Body Diode Reverse Recovery Time	I_F= 60A, dI_F/dt = 100A/μs	-	24	-	nS
Q_{rr}	Body Diode Reverse Recovery Charge		-	44	-	nC
V_{SD}	Drain-Source Diode Forward Voltage	V_{GS}=0V,I_{SD}=20A	-	-	1.2	V
T_J,T_{STG}	Operating and Storage Temperature	-55℃ to 150℃ Max				

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Typical Characteristics at T_A = 25 °C, unless otherwise specified

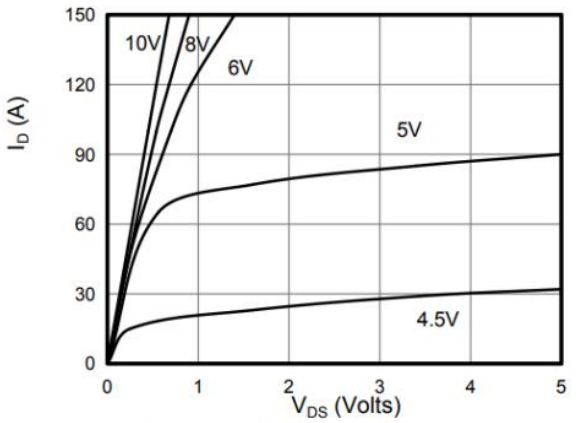


Figure 1: On-Region Characteristics

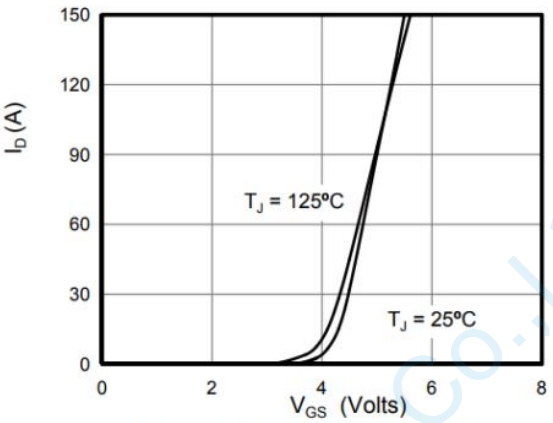


Figure 2: Transfer Characteristics

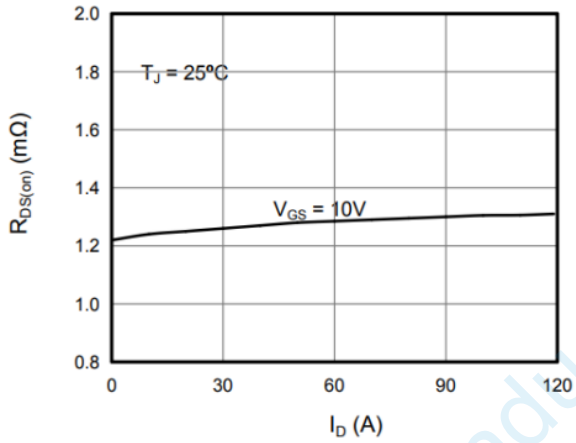


Figure 3: On-Resistance vs. Drain Current

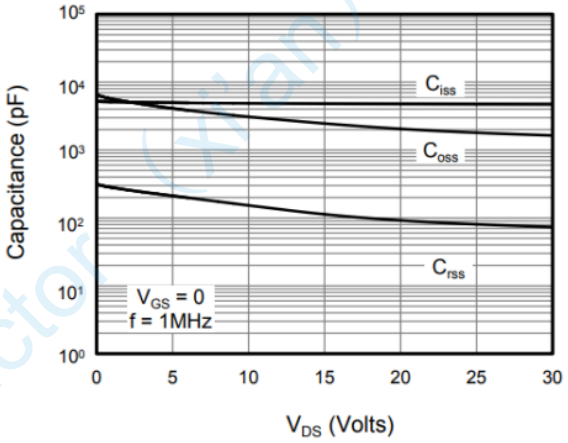


Figure 4: Capacitance Characteristics

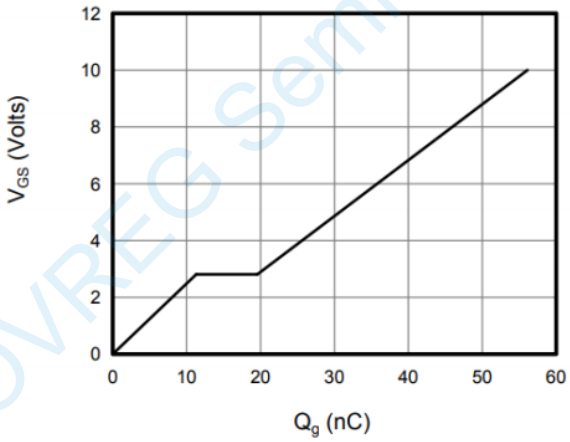


Figure 5: Gate Charge Characteristics

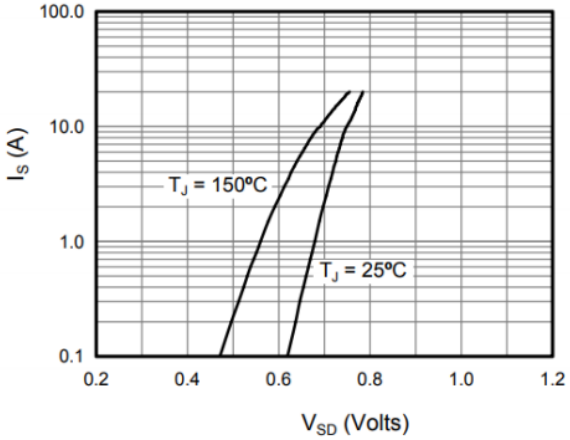


Figure 6: Body Diode Forward Voltage

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Typical Characteristics at T_A = 25 °C, unless otherwise specified

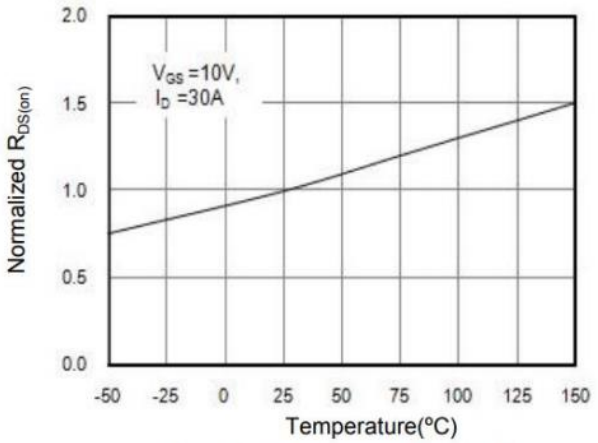


Figure 7: On-Resistance vs. Junction Temperature

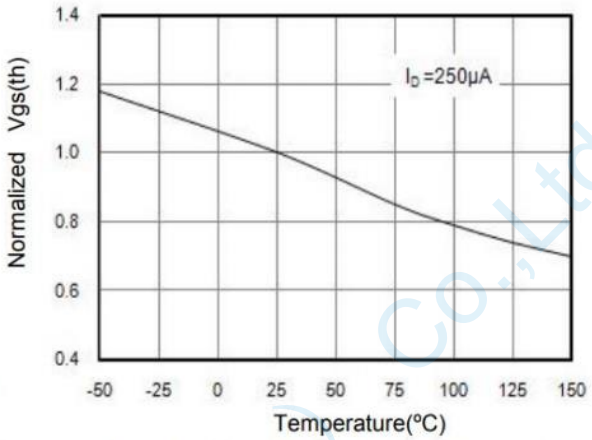


Figure 8: Vgs(th) vs. Junction Temperature

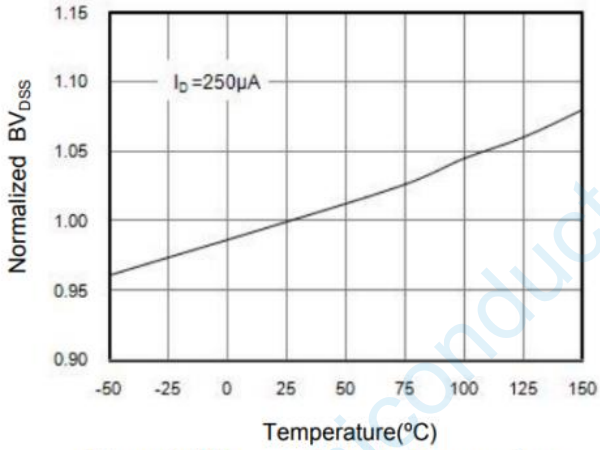


Figure 9: BV_{DSS} vs. Junction Temperature

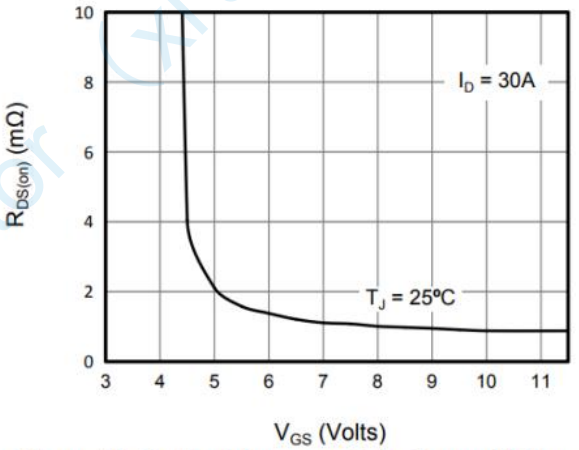


Figure 10: On-Resistance vs. Gate-Source Voltage

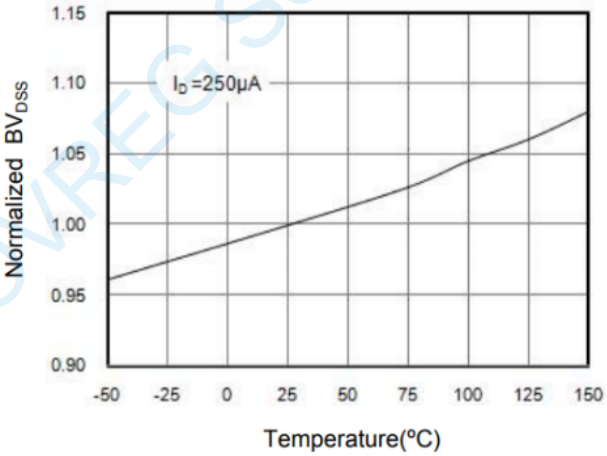


Figure 9: BV_{DSS} vs. Junction Temperature

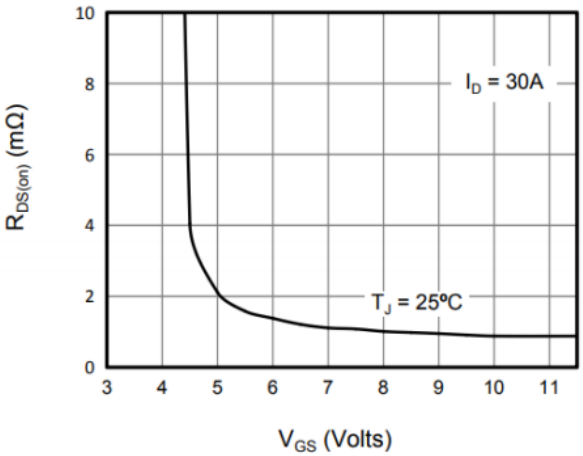


Figure 10: On-Resistance vs. Gate-Source Voltage

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TEST CIRCUIT

Figure A: Gate Charge Test Circuit and Waveforms

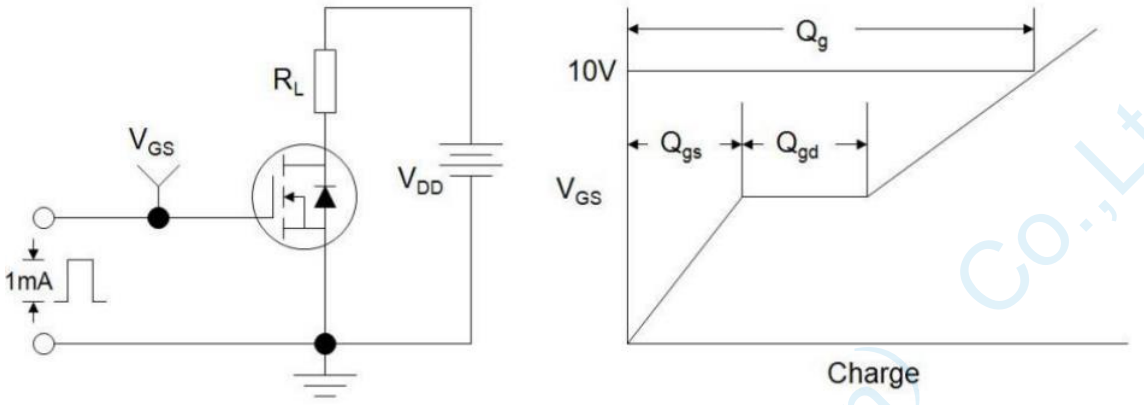


Figure B: Resistive Switching Test Circuit and Waveforms

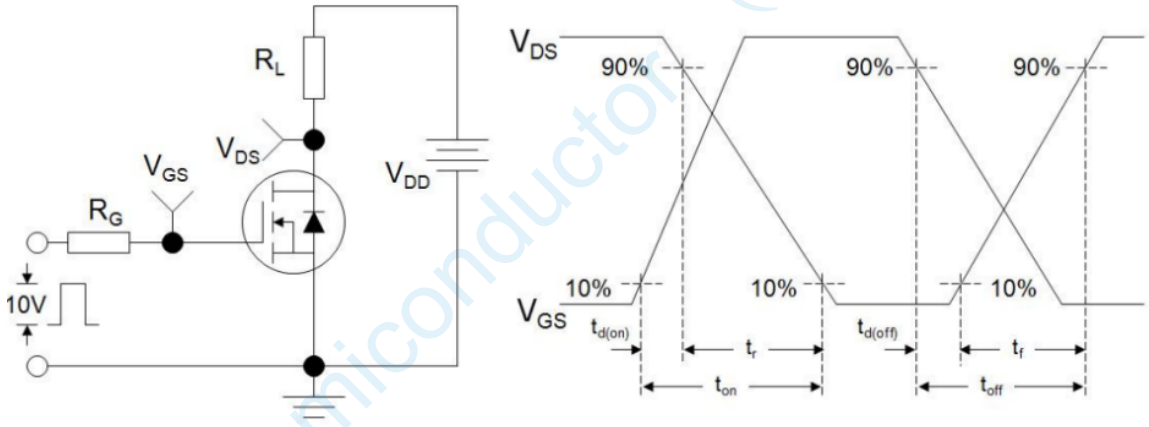
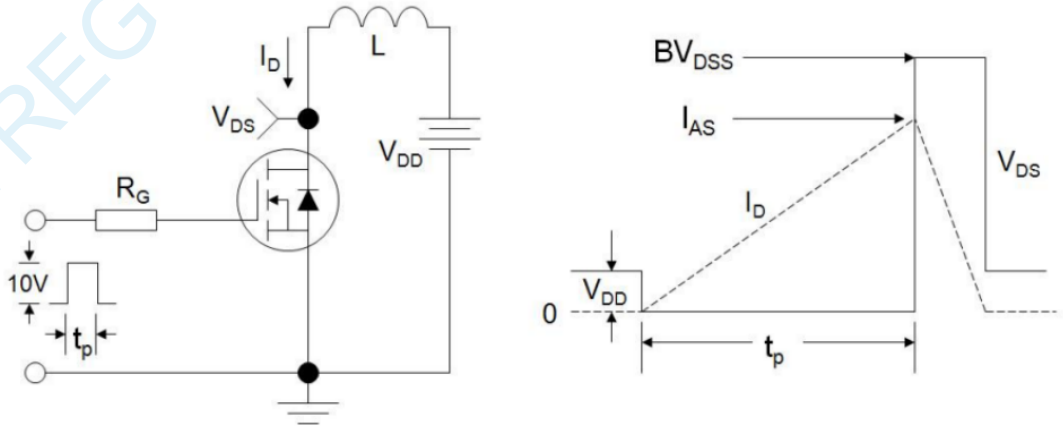
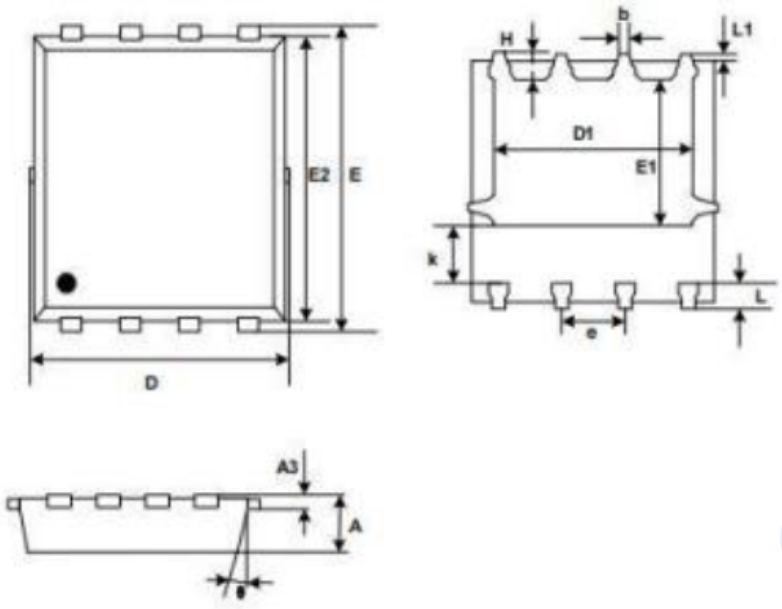


Figure C: Unclamped Inductive Switching (UIS) Test Circuit and Waveforms



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Package Information



COMMON DIMENSIONS

SYMBOL	MM	
	MIN	MAX
A	0.90	1.20
A3	0.15	0.35
D	4.80	5.40
E	5.90	6.35
D1	3.61	4.31
E1	3.30	3.92
E2	5.50	6.06
k	1.10	-
b	0.30	0.51
e	1.27BSC	
L	0.38	0.71
L1	0.05	0.36
H	0.38	0.71
θ	0°	12°

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Ordering Information

Part number	Material	Type	Reel size	MOQ
OVM45N01D5	GREEN	T/R	13 inch	5k/reel