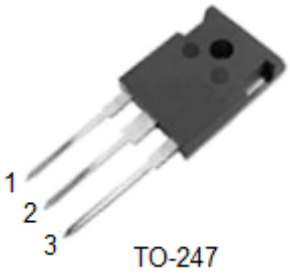
1. Features

- RoHS Compliant
- $R_{DS(ON)}$=1.0Ω(typ.)@V_{GS}=10V
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode

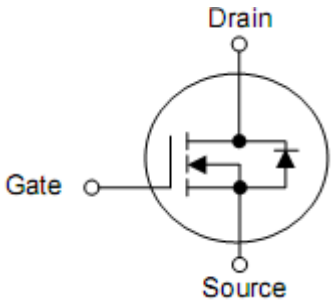
2. Applications

- Adaptor
- Charger
- SMPS Standby Power

3. Symbol



TO-247



Pin	Function
1	Gate
2	Drain
3	Source

4. Ordering Information

Part Number	Package	Brand
KNM61100A	TO-247	KIA

5. Absolute maximum ratings

T_C=25°C unless otherwise noted

Parameter	Symbol	Rating	Units
Drain-source voltage [1)]	V_{DSS}	1000	V
Gate-to-Source Voltage	V_{GSS}	±30	V
Continuous drain current	I_D	10	A
Pulsed Drain Current at V_{GS}=10V	I_{DM}	40	A
Single pulse avalanche energy	E_{AS}	900	mJ
Power dissipation	P_D	298	W
Derating factor above 25°C		2.38	W/°C
Soldering Temperature Distance of 1.6mm from case for 10 seconds	T_L	300	°C
Operating junction and storage temperature range	T_J ,T_{STG}	-55 to150	ºC

Caution: Stresses greater than those listed in the "Absolute Maximum Ratings" may cause permanent damage to the device.

6. Thermal characteristics

Parameter	Symbol	Rating	Unit
Thermal resistance junction-case	$R_{\theta JC}$	0.42	ºC/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	55	ºC/W

7. Electrical characteristics

(T_J=25°C unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Units
Drain-source breakdown voltage	BV_{DSS}	V_{GS}=0V,I_D=250uA	1000	-	-	V
Drain-source leakage current	I_{DSS}	V_{DS}=1000V, V_{GS}=0V	-	-	1	uA
		V_{DS}=800V, V_{GS}=0V,T_C=125°C	-	-	100	
Gate-source forward leakage	I_{GSS}	V_{GS}=±30V, V_{DS}=0V	-	-	±100	nA
Drain-source on-resistance	$R_{DS(on)}$	V_{GS}=10V,I_D=5A	-	1.0	1.25	Ω
Gate threshold voltage	$V_{GS(TH)}$	V_{DS}=V_{GS},I_D=250uA	2.5	-	4.5	V
Forward transconductance	gfs	V_{DS}=15V,I_D=5A	-	7.0	-	S
Input capacitance	C_{iss}	V_{DS}=25V,V_{GS}=0V f=1MHz	-	2800	-	pF
Reverse transfer capacitance	C_{rss}		-	46	-	pF
Output capacitance	C_{oss}		-	248	-	pF
Total gate charge	Q_g	V_{DD}=500V, I_D=10A V_{GS}=0~10V	-	71	-	nC
Gate-source charge	Q_{gs}		-	15	-	nC
Gate-drain charge	Q_{gd}		-	30	-	nC
Turn-on delay time	$t_{d(on)}$	V_{DD}=500V,V_{GS}=10V, R_G=9.1Ω, I_D=10A	-	46	-	ns
Rise time	t_r		-	49	-	ns
Turn-off delay time	$t_{d(off)}$		-	58	-	ns
Fall time	t_f		-	54	-	ns
Continuous Source Current 2)	I_{SD}	Integral pn-diode in MOSFET	-	-	10	A
Pulsed Source Current2)	I_{SM}		-	-	40	
Diode forward voltage	V_{SD}	I_S=10A,V_{GS}=0V,	-	-	1.5	V
Reverse Recovery Time	t_{rr}	V_{GS}=0V,I_F=10A, dI_F/dt=100A/μs	-	850	-	nS
Reverse Recovery Charge	Q_{rr}		-	4.4	-	uC

Note:
1) T_J=+25°C to +150°C.
2) Pulse width≤380us; duty cycle≤2%.

8. Typical operating characteristics

Fig. 1 Output Characteristics

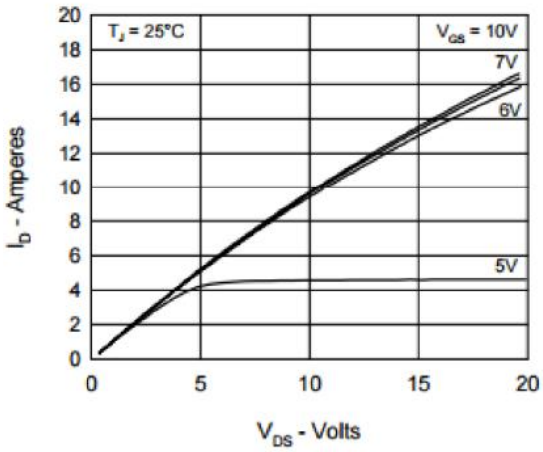


Fig. 2 Input Admittance

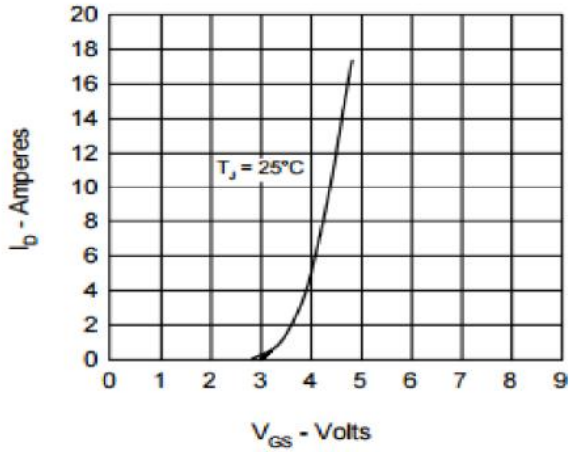


Fig. 3 $R_{DS(on)}$ vs. Drain Current

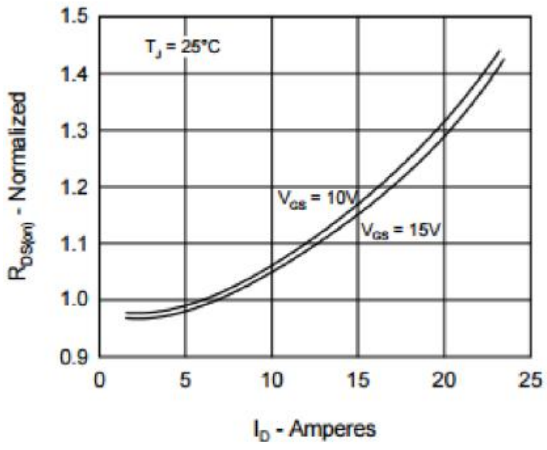


Fig. 4 Temperature Dependence of Drain to Source Resistance

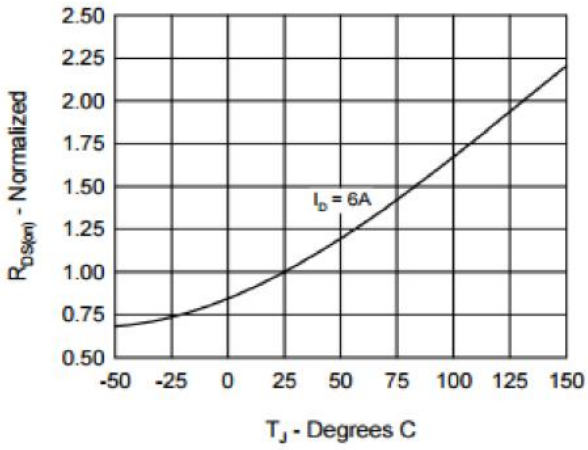


Fig. 5 Drain Current vs. Case Temperature

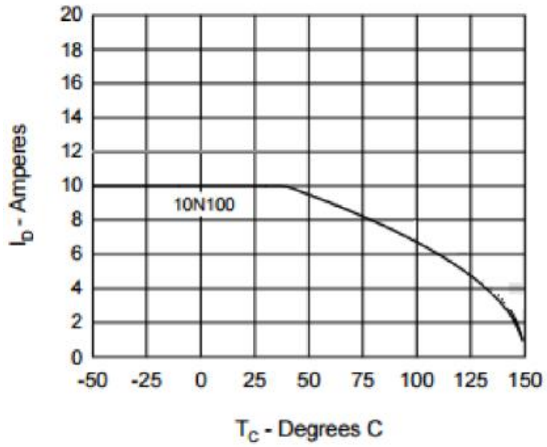


Fig. 6 Temperature Dependence of Breakdown and Threshold Voltage

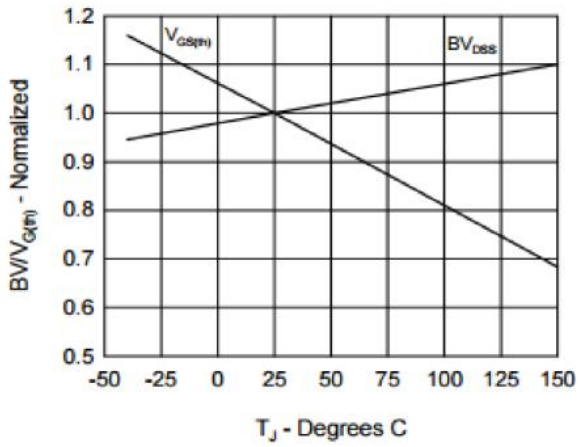


Fig.7 Gate Charge Characteristic Curve

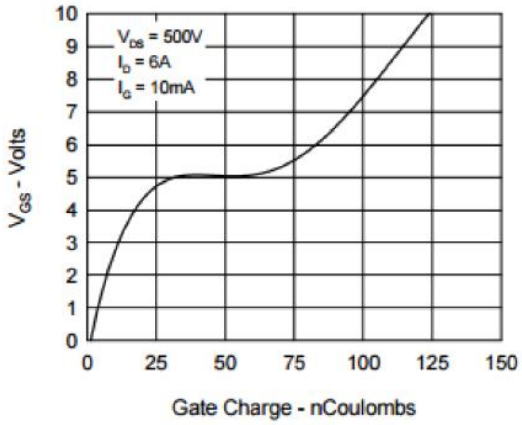


Fig.8 Forward Bias Safe Operating Area

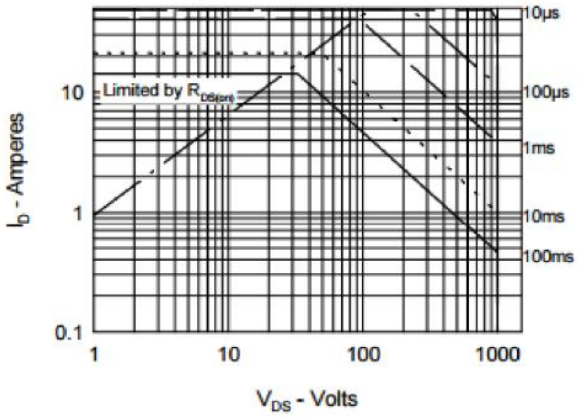


Fig.9 Capacitance Curves

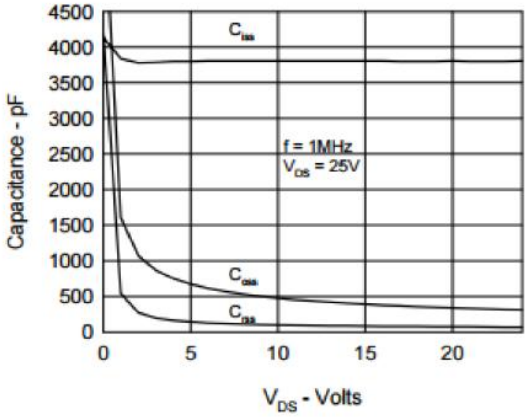


Fig.10 Source Current vs. Source to Drain Voltage

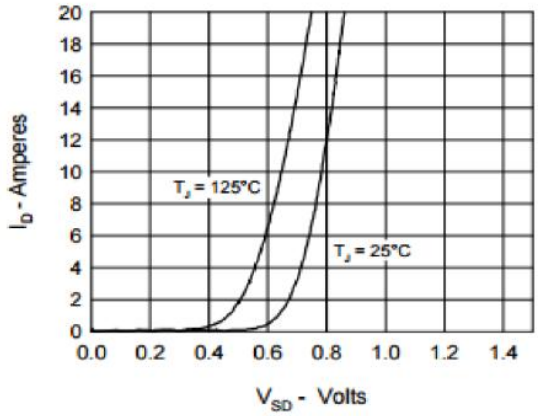
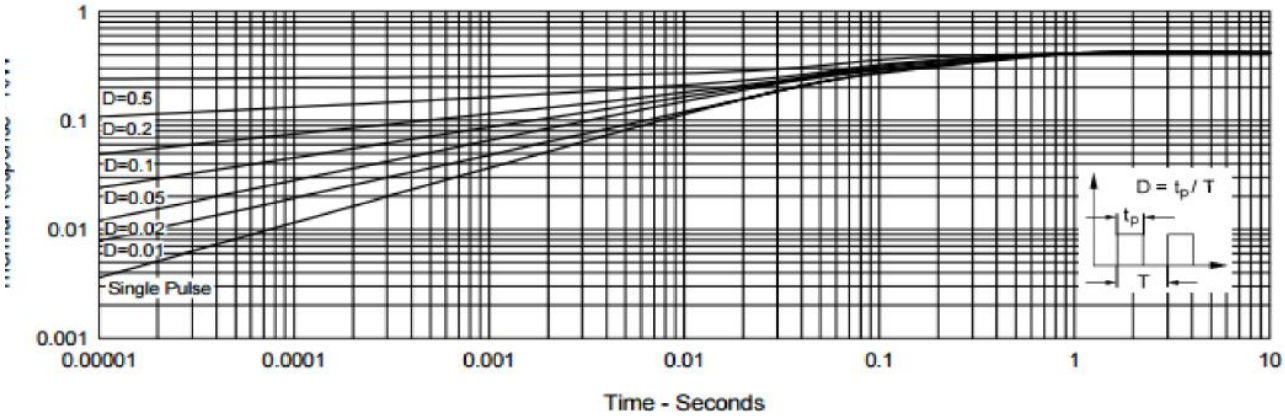


Fig.11 Transient Thermal Impedance



9. Test Circuits and Waveform

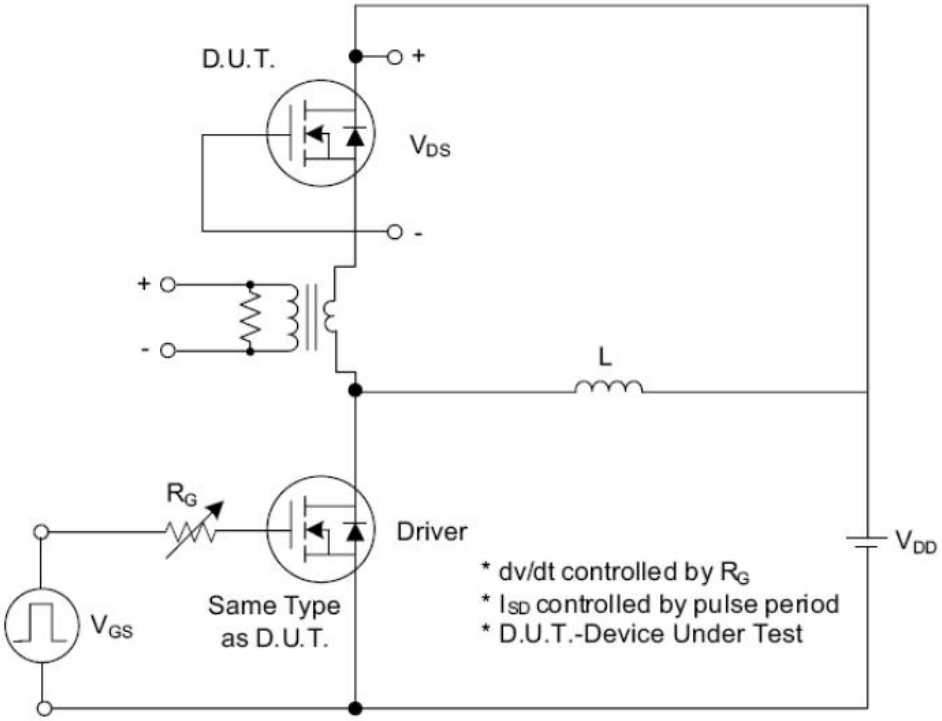


Fig. 1.1 Peak Diode Recovery dv/dt Test Circuit

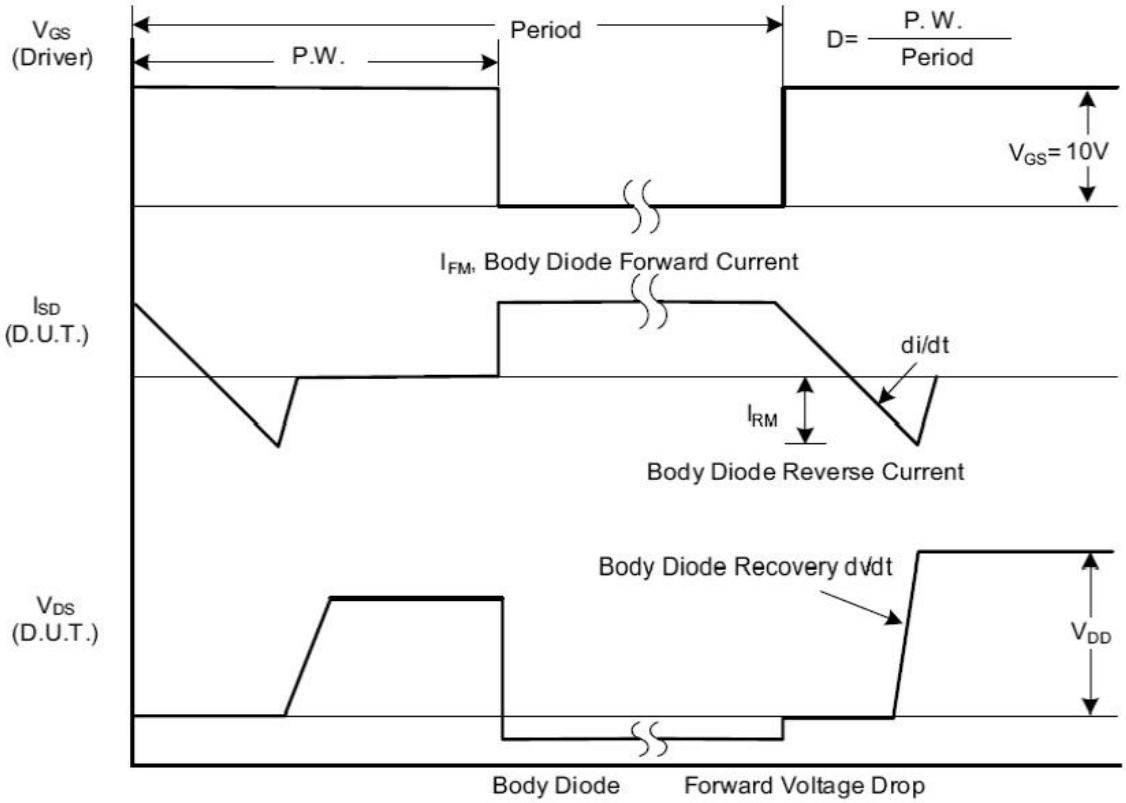


Fig. 1.2 Peak Diode Recovery dv/dt Waveforms

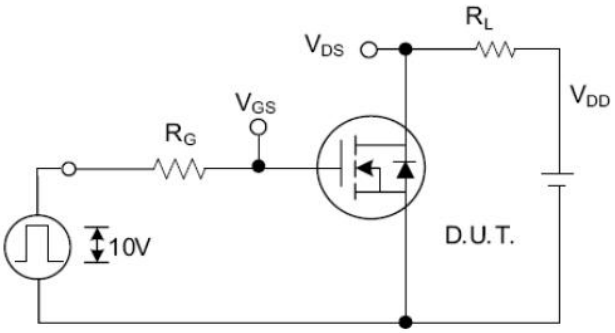


Fig. 2.1 Switching Test Circuit

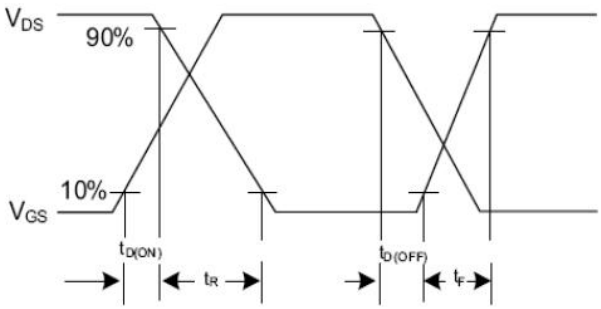


Fig. 2.2 Switching Waveforms

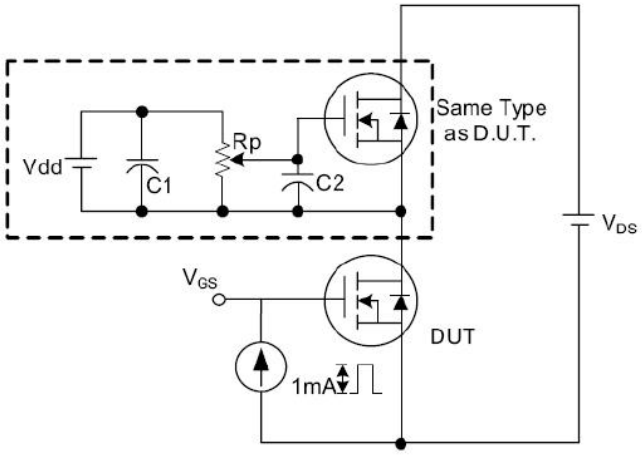


Fig. 3 . 1 Gate Charge Test Circuit

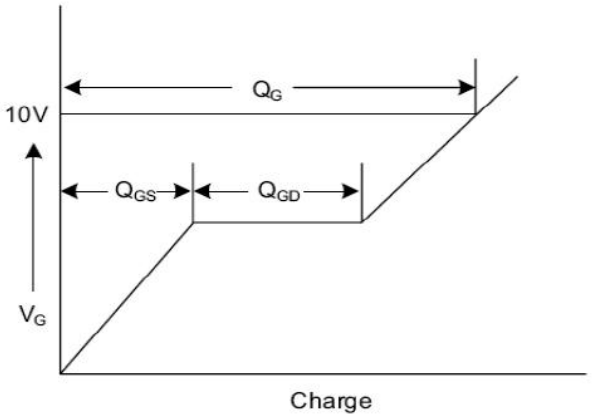


Fig. 3 . 2 Gate Charge Waveform

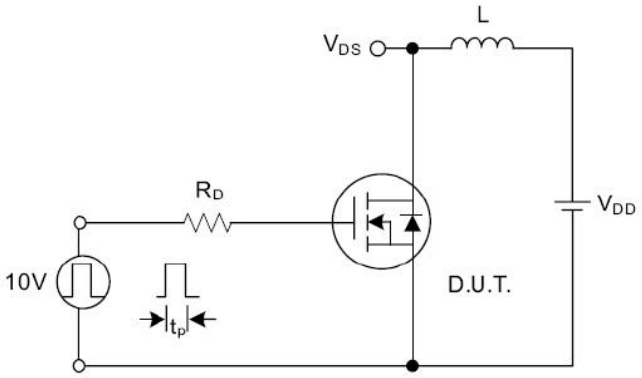


Fig. 4.1 Unclamped Inductive Switching Test Circuit

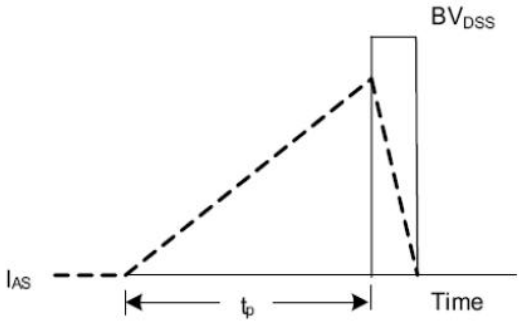


Fig. 4.2 Unclamped Inductive Switching Waveforms