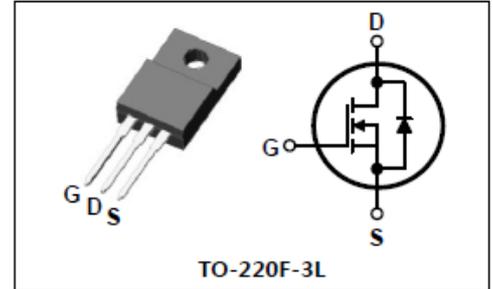


## SWITCHING REGULATOR APPLICATIONS

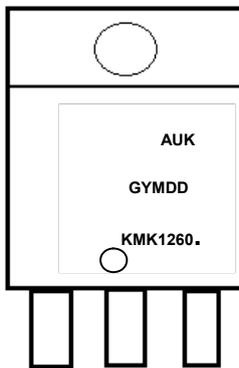
## PIN Connection

**Features**

- High Voltage :  $BV_{DSS}=600V(\text{Min.})$
- Low  $C_{rss}$  :  $C_{rss}=14.6 \text{ pF}(\text{Typ.})$
- Low gate charge :  $Q_g=41\text{nC}(\text{Typ.})$
- Low  $R_{DS(on)}$  :  $R_{DS(on)}=0.65\Omega(\text{Max.})$


**Ordering Information**

Type NO	Marking	Package code
KMK1260F	KMK1260.	TO-220F-3L

**Marking Diagram**


- Da Lian
- Column 1 : Manufacturer
- Column 2 : Production Information  
e.g.) GYMDD
- . G : Factory management code
- . YMDD : Date Code (year, month, date)
- Column 3 : Device Code

**Absolute maximum ratings ( $T_c=25^\circ\text{C}$  unless otherwise noted)**

Characteristic	Symbol	Rating	Unit	
Drain-source voltage	$V_{DSS}$	600	V	
Gate-source voltage	$V_{GSS}$	$\pm 30$	V	
Drain current (DC) *	$I_D$	$T_c=25^\circ\text{C}$	12	A
		$T_c=100^\circ\text{C}$	7.1	A
Drain current (Pulsed)*	$I_{DM}$	48	A	
Power dissipation	$P_D$	45	W	
Avalanche current (Single) ②	$I_{AS}$	12	A	
Single pulsed avalanche energy ②	$E_{AS}$	549	mJ	
Avalanche current (Repetitive) ①	$I_{AR}$	12	A	
Repetitive avalanche energy ①	$E_{AR}$	11.6	mJ	
Junction temperature	$T_J$	150	°C	
Storage temperature range	$T_{stg}$	-55~150		

\* Limited by maximum junction temperature

# KMK1260F

Characteristic		Symbol	Typ.	Max	Unit
Thermal resistance	Junction-case	$R_{th(J-C)}$	-	2.7	$^{\circ}C/W$
	Junction-ambient	$R_{th(J-A)}$	-	62.5	$^{\circ}C/W$

## Electrical Characteristics ( $T_C=25^{\circ}C$ unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage	$BV_{DSS}$	$I_D=250\mu A, V_{GS}=0V$	600	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$I_D=250\mu A, V_{DS}=V_{GS}$	2.0	-	4.0	V
Drain-source cut-off current	$I_{DSS}$	$V_{DS}=600V, V_{GS}=0V$	-	-	1	$\mu A$
Gate leakage current	$I_{GSS}$	$V_{DS}=0V, V_{GS}=\pm 30V$	-	-	$\pm 100$	nA
Drain-source on-resistance ④	$R_{DS(on)}$	$V_{GS}=10V, I_D=6.0A$	-	0.55	0.65	$\Omega$
Forward transfer conductance ④	$g_{fs}$	$V_{DS}=10V, I_D=6.0A$	-	10	-	S
Input capacitance	$C_{iss}$	$V_{GS}=0V, V_{DS}=25V$ $f=1MHz$	-	2162	2882	pF
Output capacitance	$C_{oss}$		-	183	244	
Reverse transfer capacitance	$C_{rss}$		-	14.6	19.4	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=300V, I_D=12A$ $R_G=25\Omega$ ③④	-	30	-	ns
Rise time	$t_r$		-	85	-	
Turn-off delay time	$t_{d(off)}$		-	140	-	
Fall time	$t_f$		-	90	-	
Total gate charge	$Q_g$	$V_{DS}=480V, V_{GS}=10V$ $I_D=12A$ ③④	-	41	63	nC
Gate-source charge	$Q_{gs}$		-	13	-	
Gate-drain charge	$Q_{gd}$		-	10.5	-	

## Source-Drain Diode Ratings and Characteristics ( $T_C=25^{\circ}C$ unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Source current (DC)	$I_S$	Integral reverse diode in the MOSFET	-	-	12	A
Source current (Pulsed) ①	$I_{SM}$		-	-	48	
Forward voltage ④	$V_{SD}$	$V_{GS}=0V, I_S=9.0A$	-	-	1.4	V
Reverse recovery time	$t_{rr}$	$I_S=9.0A, V_{GS}=0V$ $dI_F/dt=100A/\mu s$	-	510	-	ns
Reverse recovery charge	$Q_{rr}$		-	4.3	-	$\mu C$

Note ;

- ① Repetitive rating : Pulse width limited by maximum junction temperature
- ②  $L=7mH, I_{AS}=12A, V_{DD}=50V, R_G=25\Omega, \text{Starting } T_J=25^{\circ}C$
- ③ Pulse Test : Pulse width $\leq 300\mu s$ , Duty cycle $\leq 2\%$
- ④ Essentially independent of operating temperature

# KMK1260F

# Electrical Characteristic Curves

Fig. 1  $I_D - V_{DS}$

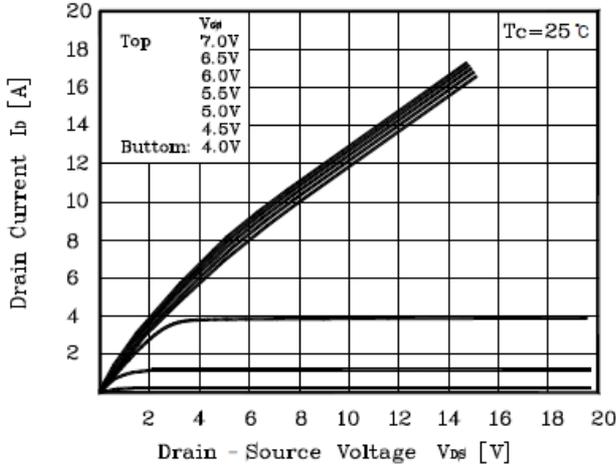


Fig. 2  $I_D - V_{GS}$

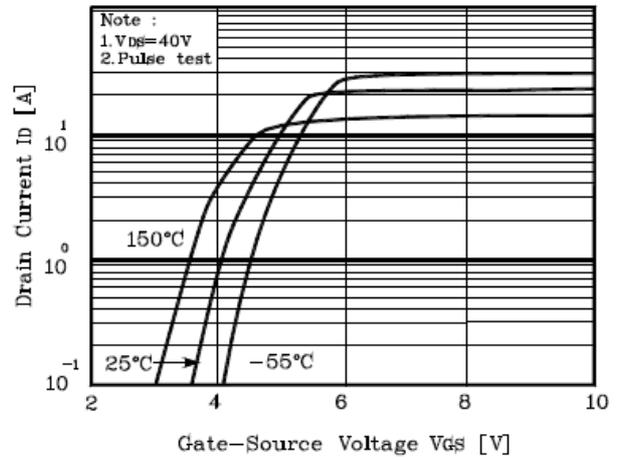


Fig. 3  $R_{DS(on)} - I_D$

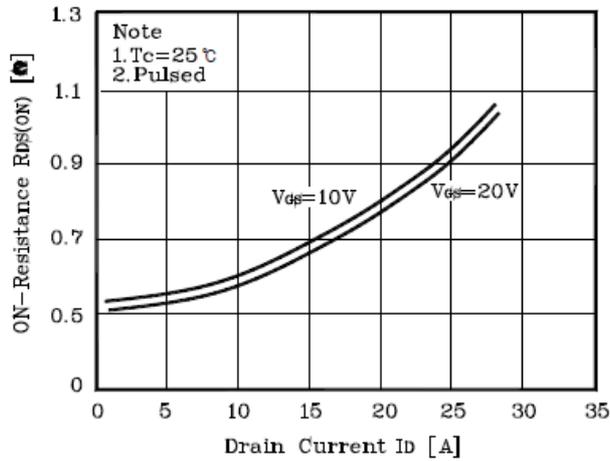


Fig. 4  $I_S - V_{SD}$

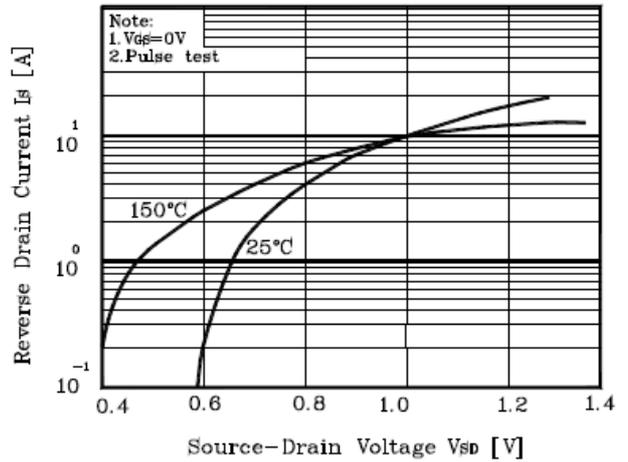


Fig. 5 Capacitance -  $V_{DS}$

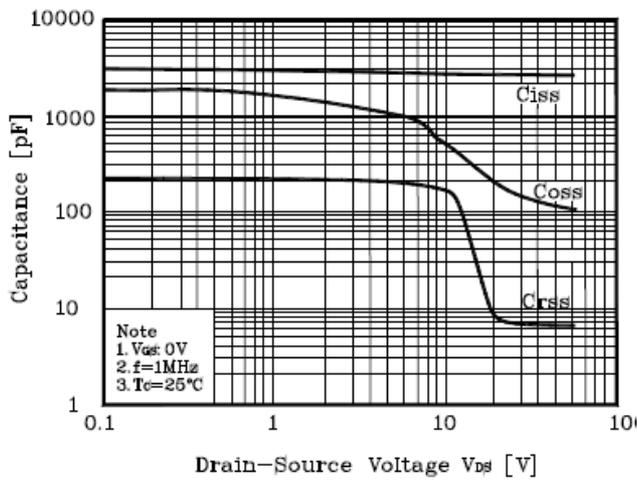
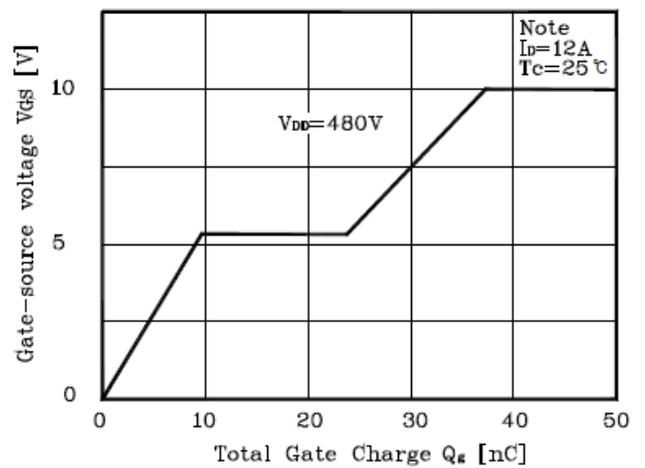


Fig. 6  $V_{GS} - Q_G$



**KMK1260F**

# Electrical Characteristic Curves

Fig. 7  $V_{DSS} - T_J$

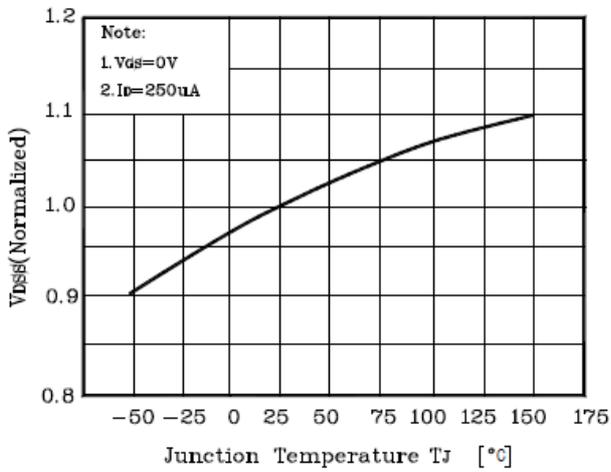


Fig. 8  $R_{DS(on)} - T_J$

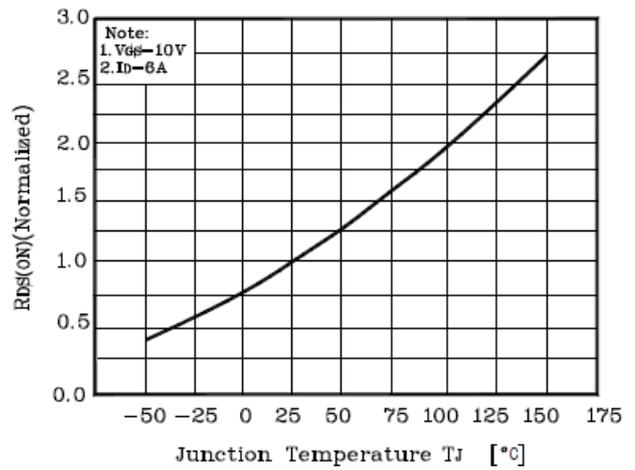


Fig. 9  $I_D - T_C$

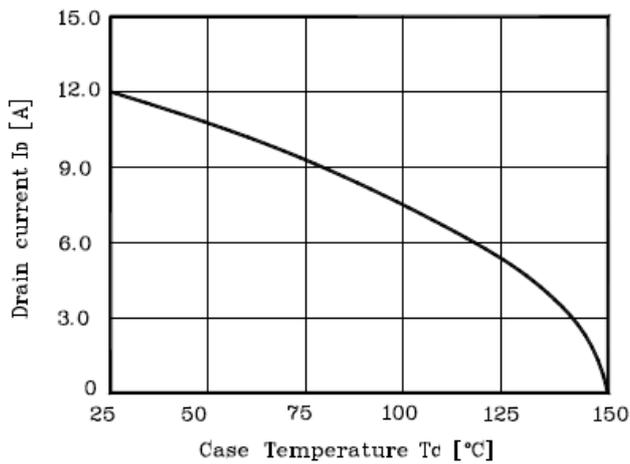


Fig. 10 Safe Operating Area

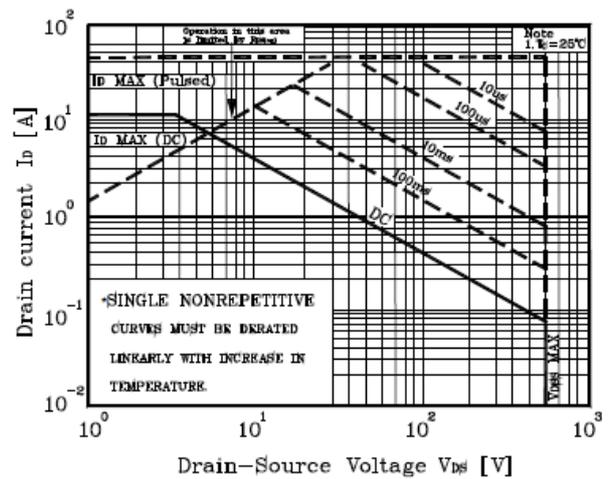


Fig. 11 Gate Charge Test Circuit & Waveform

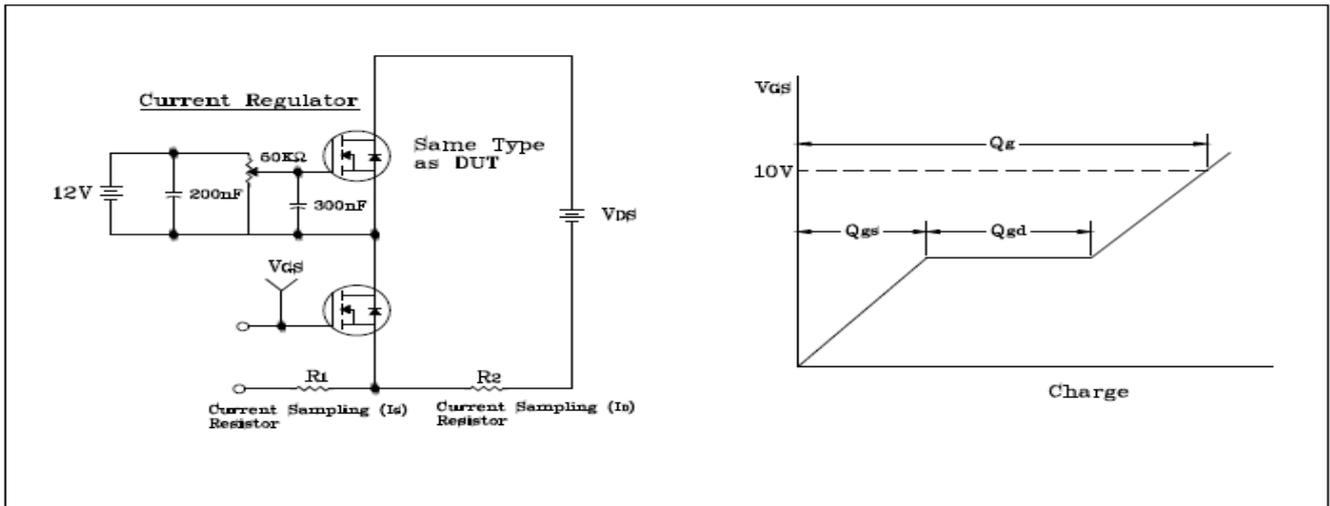


Fig. 12 Resistive Switching Test Circuit & Waveform

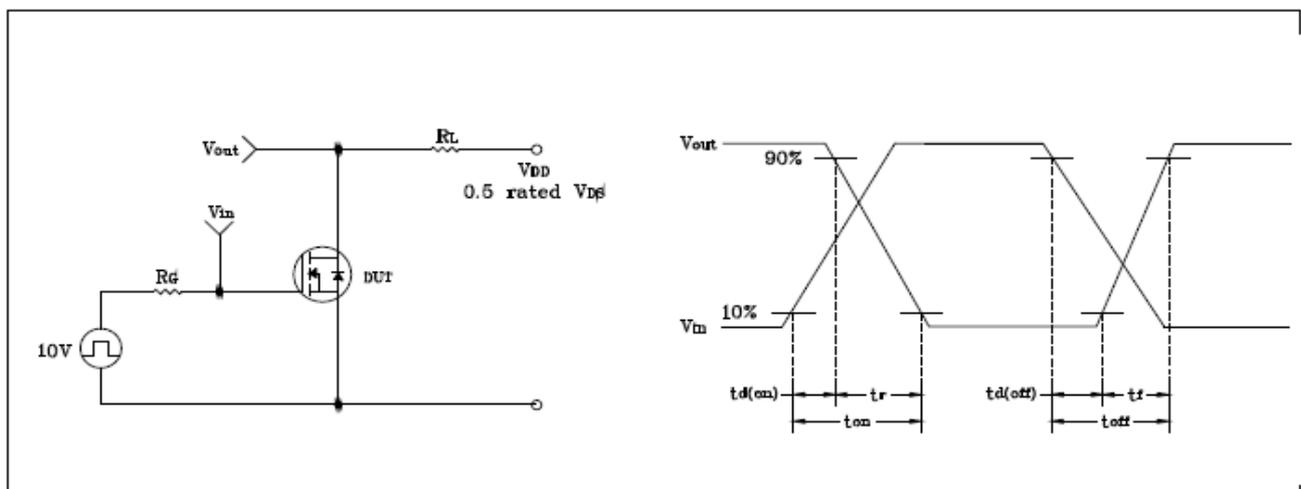


Fig. 13 EAS Test Circuit & Waveform

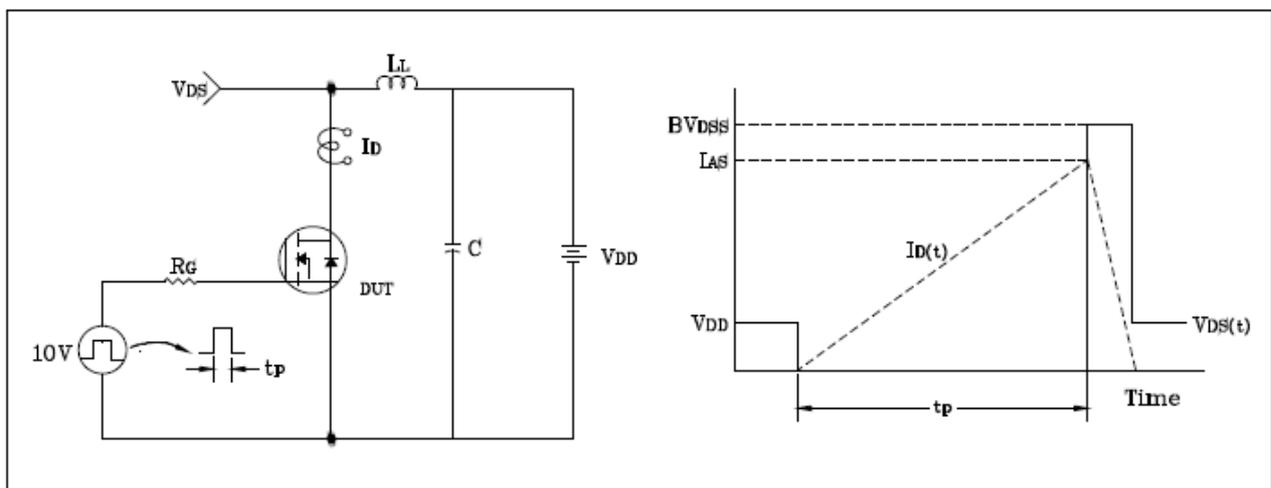
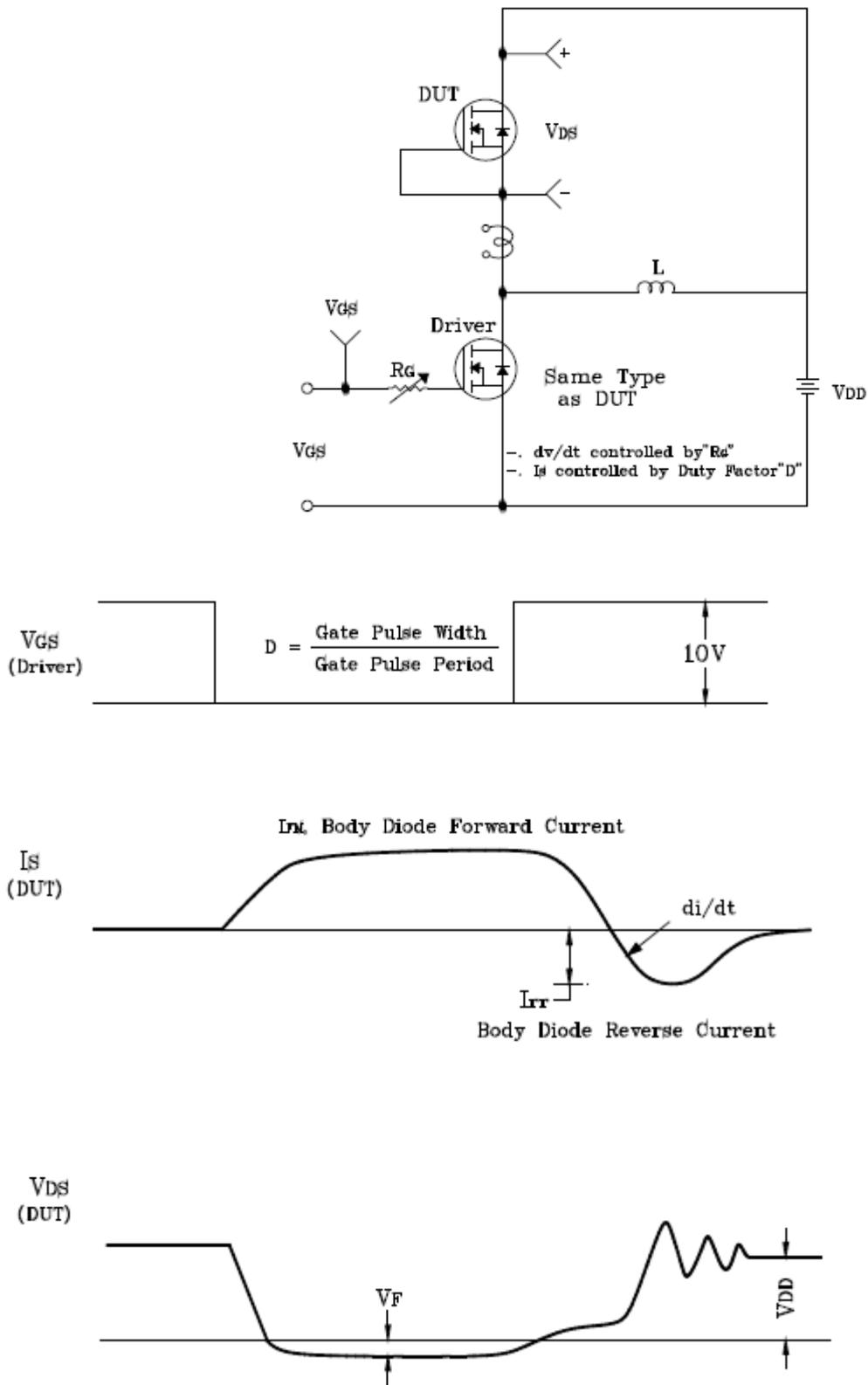


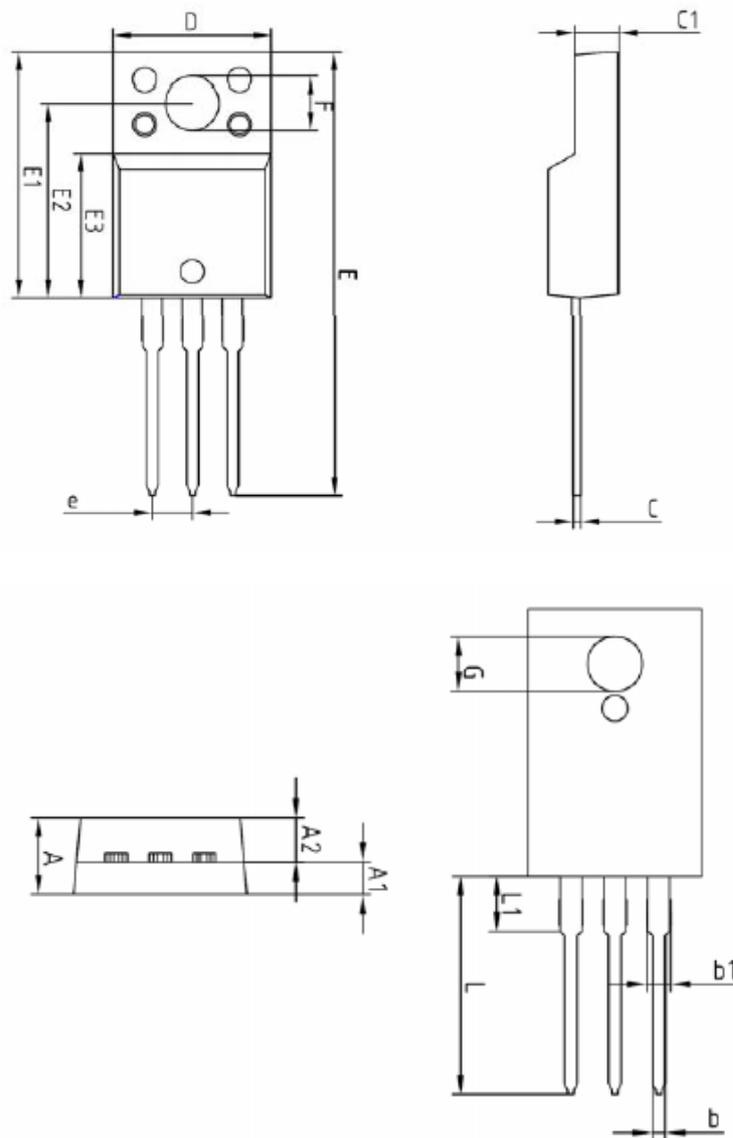
Fig. 14 Diode Reverse Recovery Time Test Circuit & Waveform



**KMK1260F**

# Outline Dimension

unit: mm



SYMBOL	MILLIMETERS			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	-	-	4.60	
A1	2.45	2.50	2.55	
A2	1.95	2.00	2.05	
b	0.65	0.75	0.85	
b1	1.07	1.27	1.47	
C	0.40	0.50	0.60	
C1	2.70	2.80	2.90	
D	9.90	10.00	10.10	
E	28.00	-	28.60	
E1	15.50	15.60	15.70	
E2	12.30	12.40	12.50	
E3	9.15	9.20	9.25	
F	3.30	3.40	3.50	
G	3.10	3.20	3.30	
e	2.54 BSC			
L	12.40	-	13.00	
L1	3.46 BSC			

**KMK1260F**

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