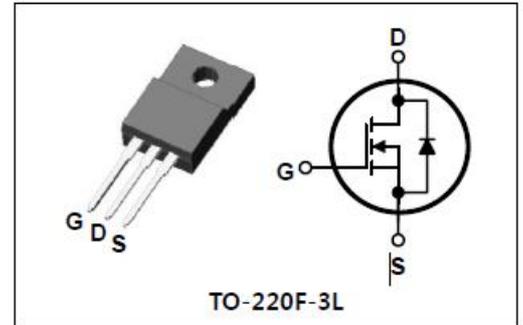


SWITCHING REGULATOR APPLICATIONS

Features

- High Voltage: $BV_{DSS}=650V(\text{Min.})$
- Low C_{rss} : $C_{rss}=5.6\text{pf}(\text{Typ.})$
- Low: gate charge: $Q_g=11.2\text{nC}(\text{Typ.})$
- Low $R_{DS(\text{on})}$: $R_{DS(\text{on})}=3.0\Omega(\text{Max.})$

PIN Connection



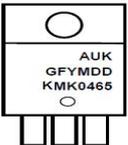
Ordering Information

Type NO.	Marking	Package Code
KMK0465F	KMK0465•	TO-220F-3L
KMK0465F(HF)	KMK0465•	TO-220F-3L

*KMK0465F: Pd Free Product

*KMK0465F(HF): Halogen Free product

Marking Diagram

	Column 1 : Manufacturer
	Column 2 : Production Information e.g.) GFYMDD
	- . G : Option Code (H : Halogen Free) - . F : Factory Management Code - . YMDD : Date Code (Year, Month, Date)
	Column 3 : Device Code

Absolute maximum ratings (Tc=25°C unless otherwise noted)

Characteristic	Symbol	Ratings	Unit	
Drain-source voltage	V_{DSS}	650	V	
Gate-source voltage	V_{GSS}	± 30	V	
Drain current (DC) *	I_D	$T_C=25^\circ\text{C}$	4	A
		$T_C=100^\circ\text{C}$	2.0	A
Drain current (pulsed) *	I_{DM}	16	A	
Power dissipation	P_D	30	W	
Avalanche current (single) ②	I_{AS}	4	A	
Single pulsed avalanche energy ②	E_{AS}	81.5	mJ	
Avalanche current (Repetitive) ①	I_{AR}	4	A	
Repetitive avalanche energy ①	E_{AR}	3.4	mJ	
Junction temperature	T_J	150	°C	
Storage temperature range	T_{stg}	-55~150		

* : Limited by maximum junction temperature

KMK0465F

Characteristic		Symbol	Typ.	Max	Unit
Thermal resistance	Junction-case	$R_{th(J-C)}$	-	4.16	°C/W
	Junction-ambient	$R_{th(J-A)}$	-	62.5	

Electrical Characteristics (Tc=25°C unless otherwise noted)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage	BV_{DSS}	$I_D=250\mu A, V_{GS}=0$	650	-	-	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}	$V_{DS}=650V, V_{GS}=0V$	-	-	1	μA
Gate leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 30V$	-	-	± 100	nA
Drain-source on-resistance ④	$R_{DS(ON)}$	$V_{GS}=10V, I_D=2.0A$	-	2.4	3.0	Ω
Forward transfer conductance ④	g_{fs}	$V_{DS}=10V, I_D=2.0A$	-	4.0	-	S
Input capacitance	C_{iss}	$V_{GS}=10V, V_{DS}=25V$ $F=1MHz$	-	703	878	pF
Output capacitance	C_{oss}		-	54.6	68.2	
Reverse transfer capacitance	C_{rss}		-	5.6	7.0	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=300V, I_D=4.0A$ $R_G=25\Omega$ ③④	-	10	-	ns
Rise time	t_r		-	42	-	
Turn-off delay time	$T_{d(off)}$		-	38	-	
Fall time	t_f		-	46	-	
Total gate charge	Q_g	$V_{DS}=520V, V_{GS}=10V$ $I_D=4.0A$ ③④	-	11.2	14.0	nC
Gate-source charge	Q_{gs}		-	3.9	-	
Gate-drain charge	Q_{gd}		-	2.5	-	

Source-Drain Diode Ratings and Characteristics(Tc=25°C unless otherwise noted)

Characteristic	Symbol	Test Condition	Min	Typ.	Max	Unit
Source current(DC)	I_s	Integral reverse diode In the MOSFET	-	-	4	A
Source current(pulsed) ①	I_{SM}		-	-	16	
Forward voltage ④	V_{SD}	$V_{GS}=0V, I_s=4.0A$	-	-	1.4	V
Reverse recovery time	t_{rr}	$I_s=4.0A, V_{GS}=0V$ $dI_f/dt=100A/us$	-	300	-	ns
Reverse recovery charge	Q_{rr}		-	2.2	-	μC

Note:

- ① Repetitive rating : Pulse width limited by maximum junction temperature
- ② L=9.4mH, IAS=4.0A, VDD=50V, RG=25 Ω , Starting TJ=25° C
- ③ Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
- ④ Essentially independent of operating temperature

Electrical Characteristic Curves

Fig. 1 $I_D - V_{DS}$

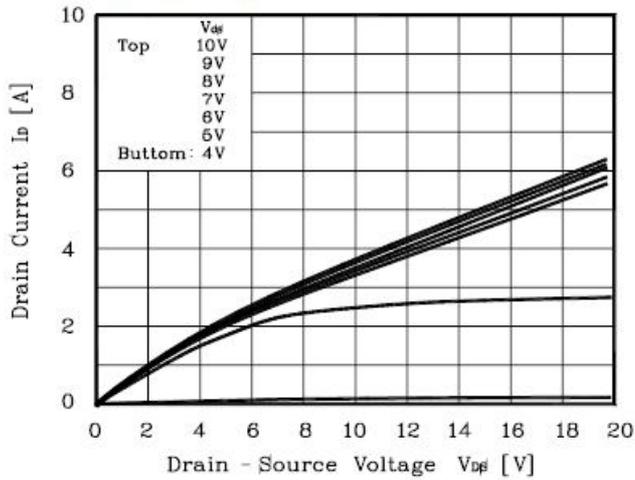


Fig. 2 $I_D - V_{GS}$

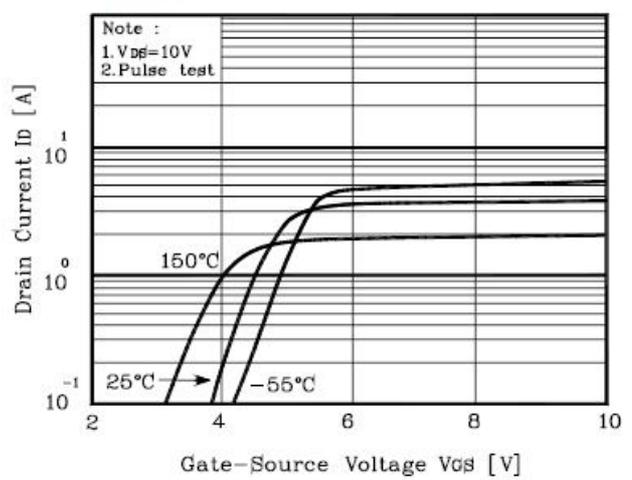


Fig. 3 $R_{DS(on)} - I_D$

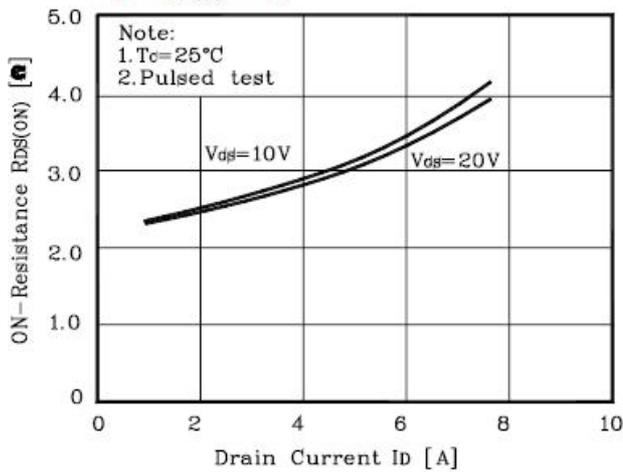


Fig. 4 $I_S - V_{SD}$

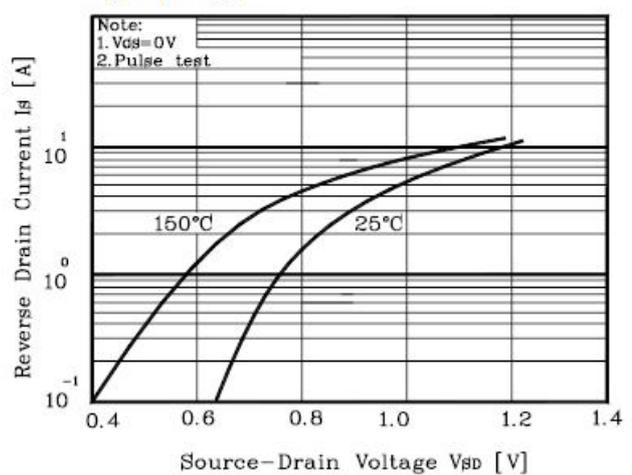


Fig. 5 Capacitance - V_{DS}

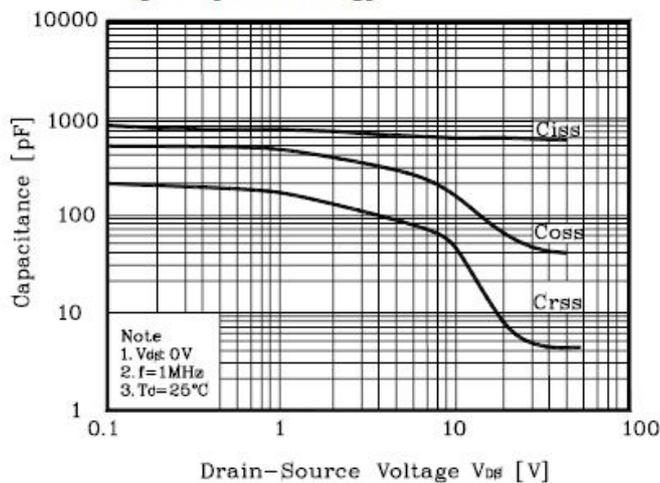
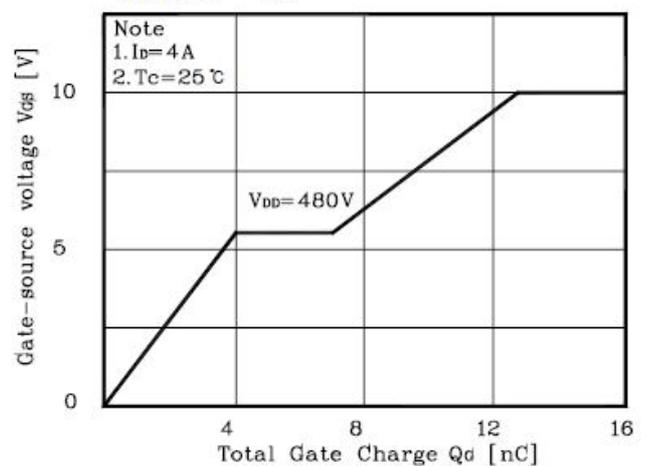


Fig. 6 $V_{GS} - Q_G$



Electrical Characteristic Curves

Fig. 7 $V_{DSS} - T_J$

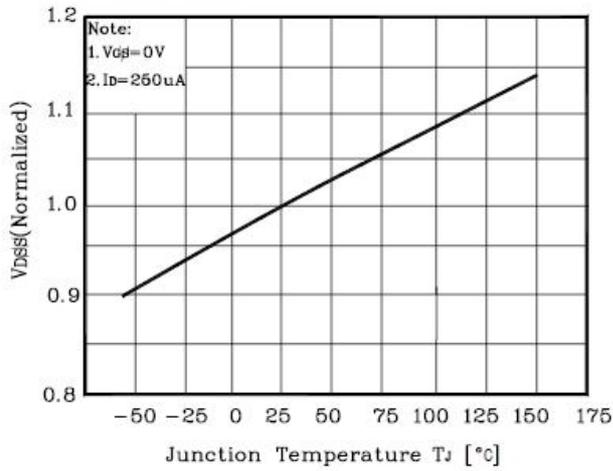


Fig. 8 $R_{DS(on)} - T_J$

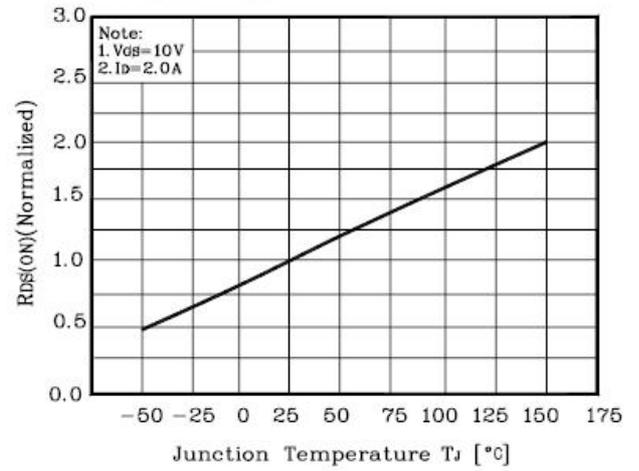


Fig. 9 $I_D - T_C$

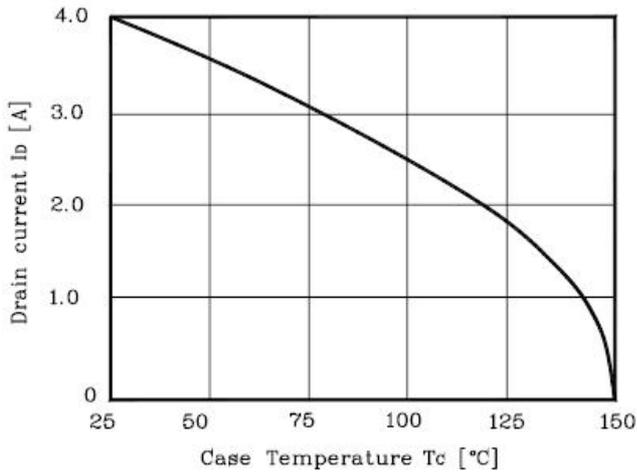


Fig. 10 Safe Operating Area

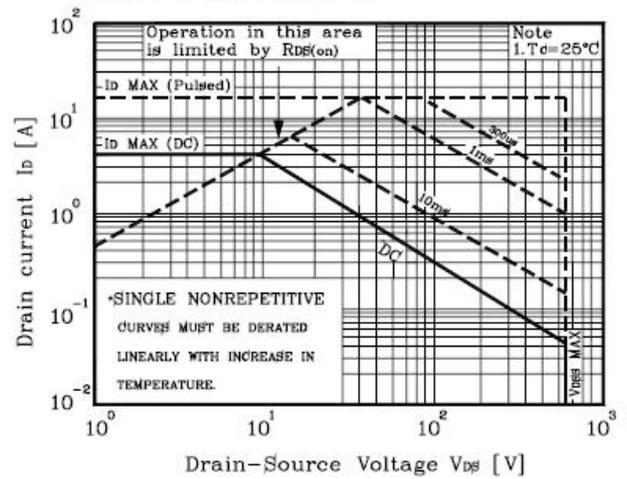


Fig. 11 Gate Charge Test Circuit & Waveform

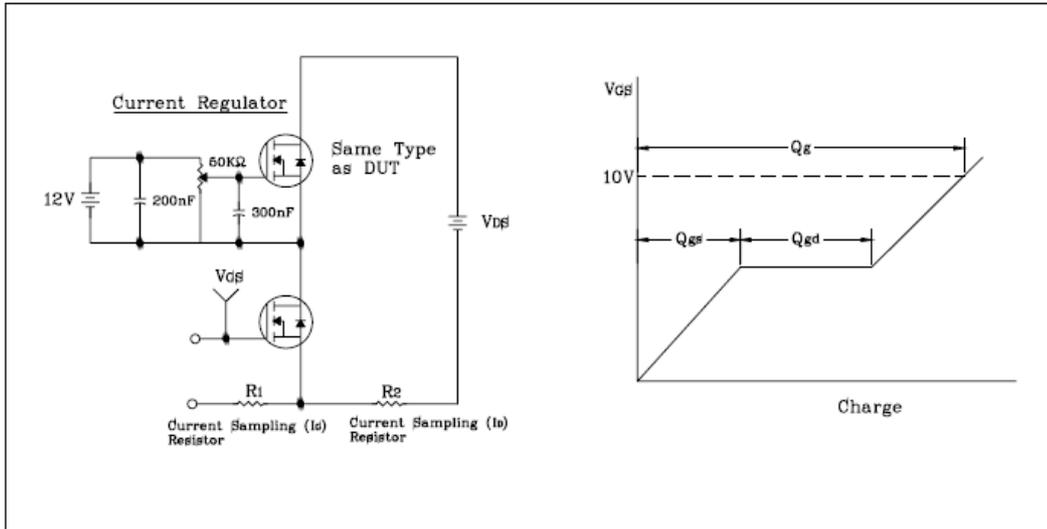


Fig. 12 Resistive Switching Test Circuit & Waveform

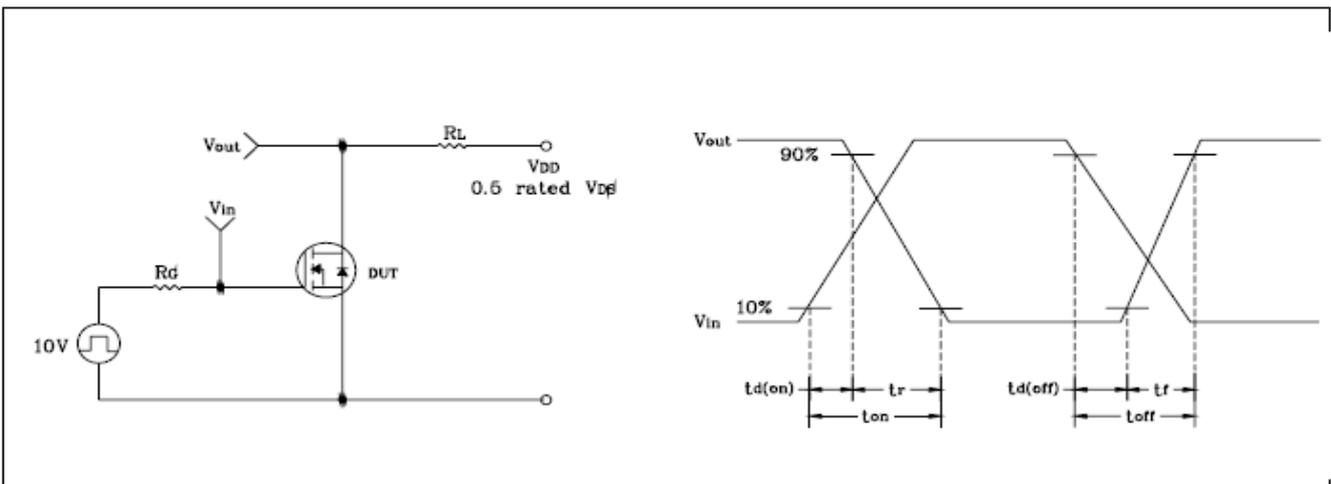


Fig. 13 EAS Test Circuit & Waveform

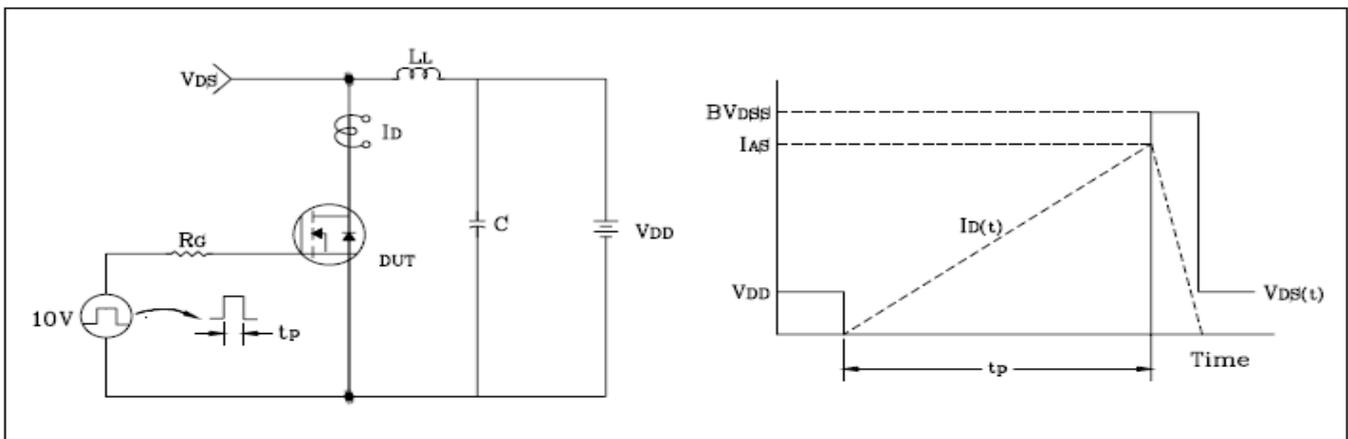
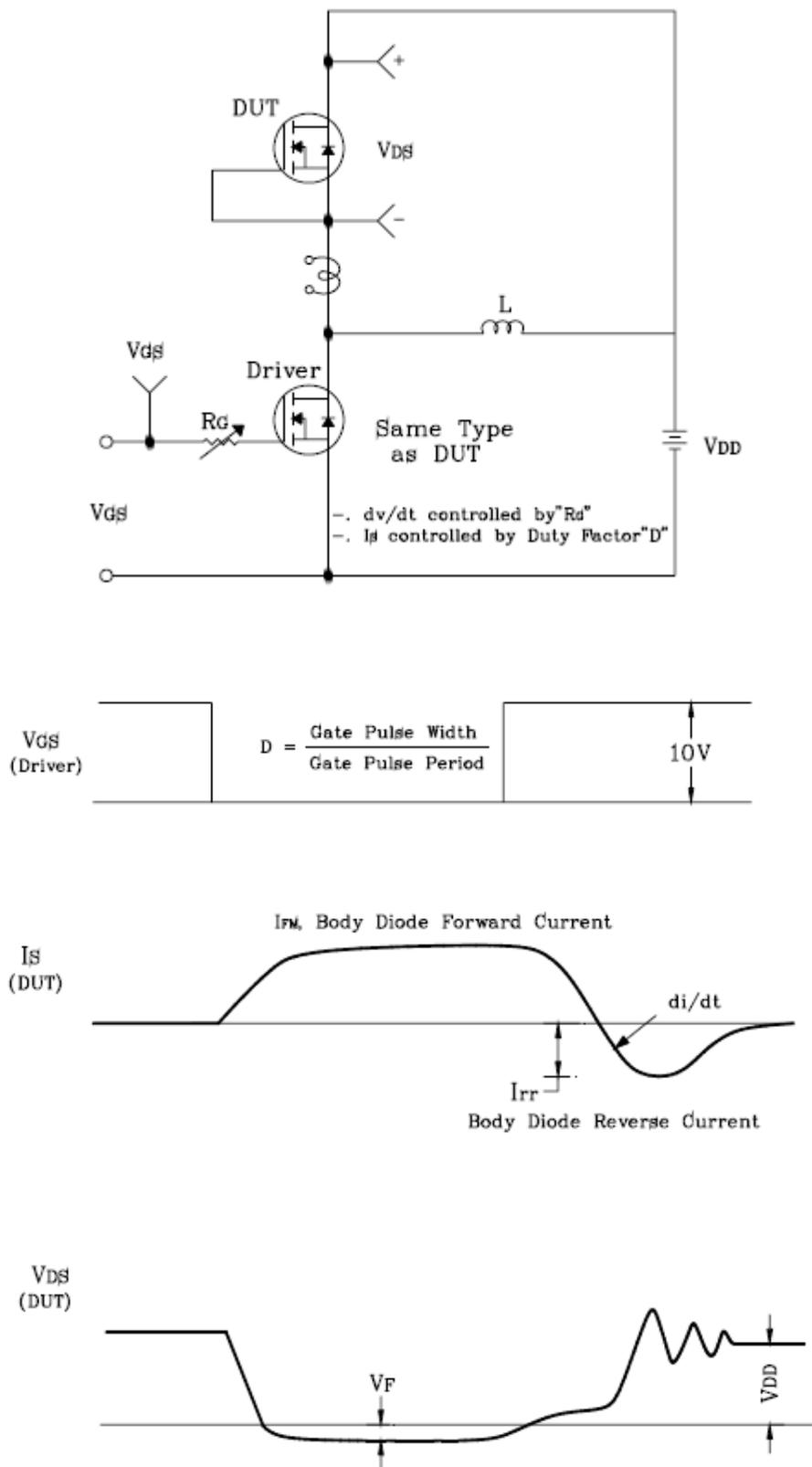


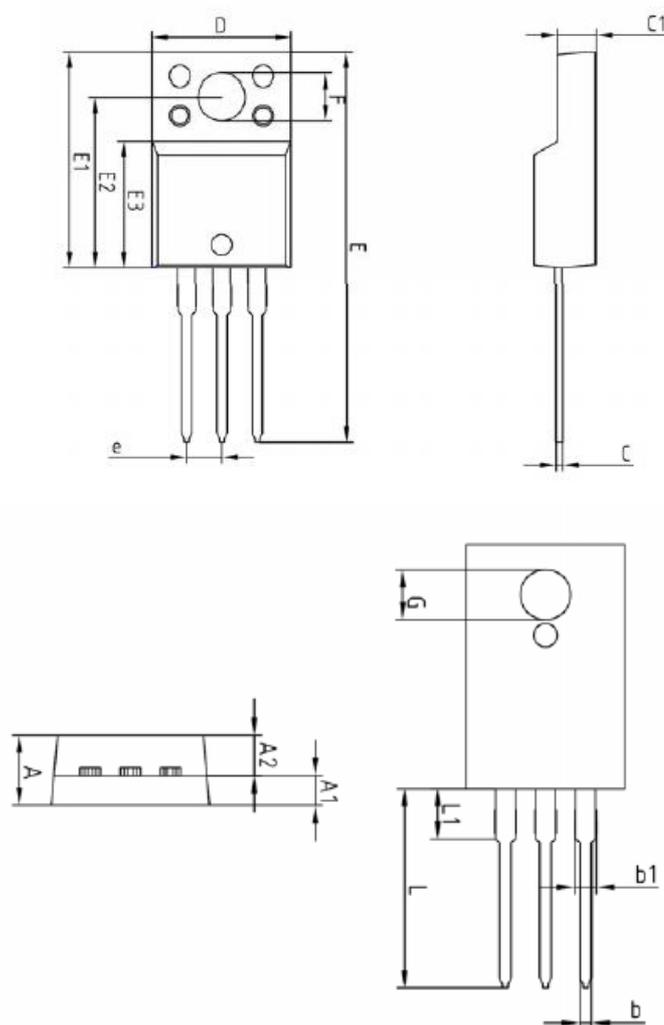
Fig. 14 Diode Reverse Recovery Time Test Circuit & Waveform



KMK0465F

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			

The AUK Dalian Corp. products are intended for the use as components in general electronic equipment (Office and communication equipment, measuring equipment, home appliance, etc.).

Please make sure that you consult with us before you use these AUK Dalian Corp. products in equipments which require high quality and / or reliability, and in equipments which could have major impact to the welfare of human life(atomic energy control, airplane, spaceship, transportation, combustion control, all types of safety device, etc.). AUK Dalian Corp. cannot accept liability to any damage which may occur in case these AUK Dalian Corp. products were used in the mentioned equipments without prior consultation with AUK Dalian Corp..

Specifications mentioned in this publication are subject to change without notice.