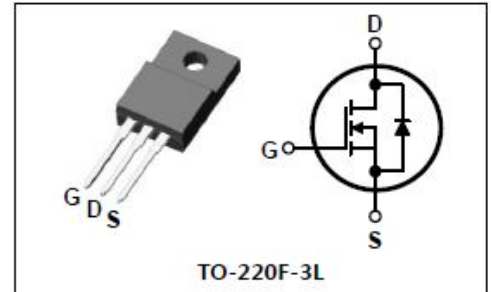


SWITCHING REGULATOR APPLICATIONS

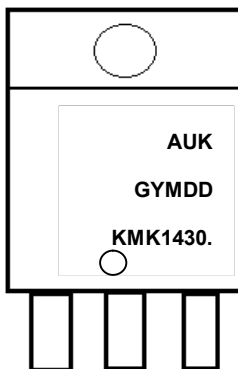
PIN Connection

Features

- High Voltage : $BV_{DSS}=300V(\text{Min.})$
- Low C_{rss} : $C_{rss}=19pF(\text{Typ.})$
- Low gate charge : $Q_g=24nC(\text{Typ.})$
- Low $R_{DS(on)}$: $R_{DS(on)}=0.29\Omega(\text{Max.})$


Ordering Information

Type NO.	Marking	Package Code
KMK1430F	KMK1430•	TO-220F-3L

Marking Diagram


Column 1 : Manufacturer

Column 2 : Production Information

e.g.) GYMDD

-. G : Factory management code

-. YMDD : Date Code (year, month, date)

Column 3 : Device Code

Column 4 : • Da Lian

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

Characteristic	Symbol	Rating	Unit	
Drain-source voltage	V_{DSS}	300	V	
Gate-source voltage	V_{GSS}	± 30	V	
Drain current (DC) *	I_D	$T_c=25^\circ\text{C}$	14	A
		$T_c=100^\circ\text{C}$	8.8	A
Drain current (Pulsed)*	I_{DM}	56	A	
Power dissipation	P_D	35	W	
Avalanche current (Single) ②	I_{AS}	14	A	
Single pulsed avalanche energy ②	E_{AS}	800	mJ	
Avalanche current (Repetitive) ①	I_{AR}	14	A	
Repetitive avalanche energy ①	E_{AR}	25	mJ	
Junction temperature	T_J	150	$^\circ\text{C}$	
Storage temperature range	T_{stg}	-55~150		

* Limited by maximum junction temperature

KMK1430F

Characteristic		Symbol	Typ.	Max	Unit
Thermal resistance	Junction-case	$R_{th(J-C)}$	-	0.89	$^{\circ}C/W$
	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}	$I_D=250\mu A, V_{GS}=0V$	300	-	-	V
Gate threshold voltage	$V_{GS(th)}$	$I_D=250\mu A, V_{DS}=V_{GS}$	3.0	-	5.0	V
Drain-source cut-off current	I_{DSS}	$V_{DS}=300V, V_{GS}=0V$	-	-	1	uA
		$V_{DS}=300V, V_{GS}=0V$ $T_C=125^{\circ}C$	-	-	200	
Gate leakage current	I_{GSS}	$V_{DS}=0V, V_{GS}=\pm 30V$	-	-	± 100	nA
Drain-source on-resistance ④	$R_{DS(on)}$	$V_{GS}=10V, I_D=7.0A$	-	0.24	0.29	Ω
Forward transfer conductance ④	g_{fs}	$V_{DS}=10V, I_D=7.0A$	-	7.8	-	S
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V$ $f=1\text{ MHz}$	-	1075	1344	pF
Output capacitance	C_{oss}		-	182	228	
Reverse transfer capacitance	C_{rss}		-	19	23.8	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=150V, I_D=14A$ $R_G=25\Omega$ ③④	-	22	-	ns
Rise time	t_r		-	145	-	
Turn-off delay time	$t_{d(off)}$		-	45	-	
Fall time	t_f		-	70	-	
Total gate charge	Q_g	$V_{DS}=240, V_{GS}=10V$ $I_D=14A$ ③④	-	24	30	nC
Gate-source charge	Q_{gs}		-	8.5	-	
Gate-drain charge	Q_{gd}		-	9.5	-	

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	-	-	14	A
Source current (Pulsed) ①	I_{SM}		-	-	56	
Forward voltage ④	V_{SD}	$V_{GS}=0V, I_S=8A$	-	-	1.4	V
Reverse recovery time	t_{rr}	$I_S=14A, V_{GS}=0V$ $dI_F/dt=100A/\mu s$	-	235	-	ns
Reverse recovery charge	Q_{rr}		-	1.6	-	uC

Note ;

① Repetitive rating : Pulse width limited by maximum junction temperature

② $L=6.8mH, I_{AS}=14A, V_{DD}=50V, R_G=25\Omega, \text{Starting } T_J=25^{\circ}C$

③ Pulse Test : Pulse width $\leq 300\mu s, \text{Duty cycle}\leq 2\%$

④ Essentially independent of operating temperature

Electrical Characteristic Curves

Fig. 1 $I_D - V_{DS}$

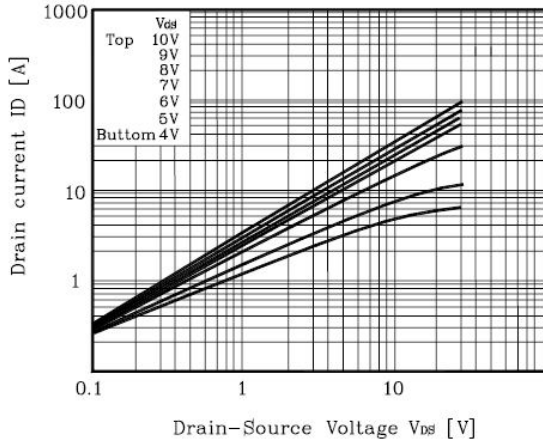


Fig. 2 $I_D - V_{GS}$

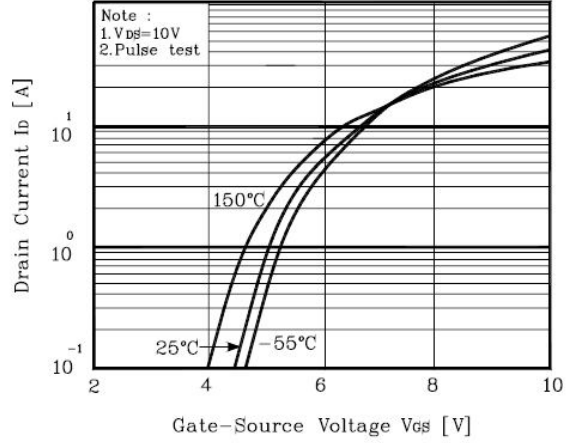


Fig. 3 $R_{DS(on)} - I_D$

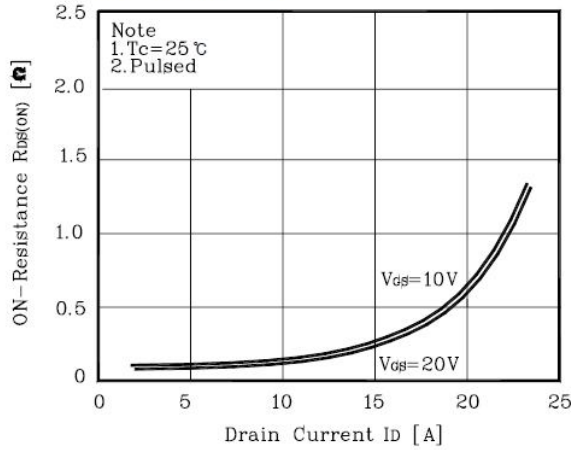


Fig. 4 $I_S - V_{SD}$

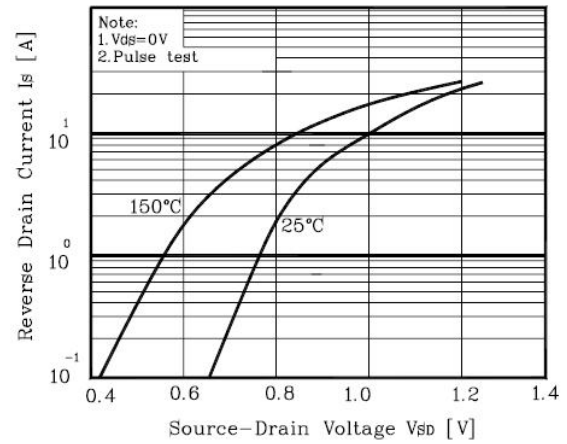


Fig. 5 Capacitance - V_{DS}

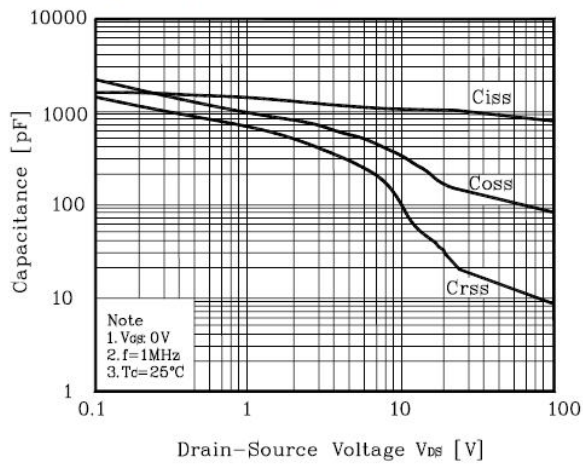
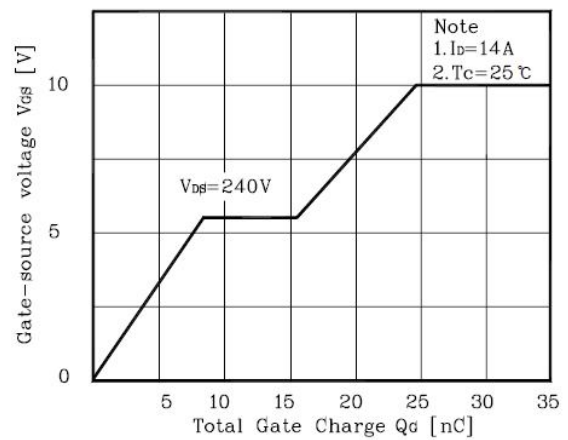


Fig. 6 $V_{GS} - Q_G$



Electrical Characteristic Curves

Fig. 7 $V_{DS} - T_J$

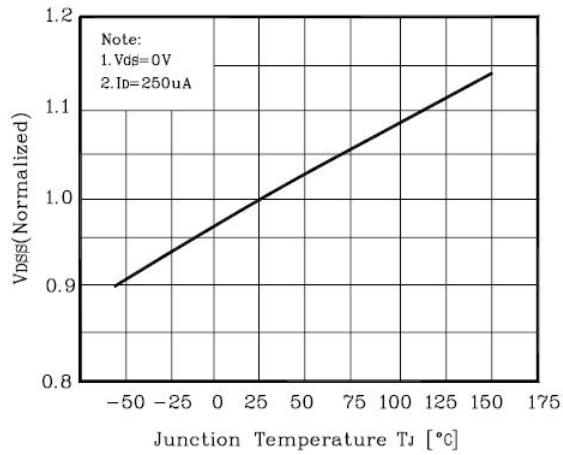


Fig. 8 $R_{DS(on)} - T_J$

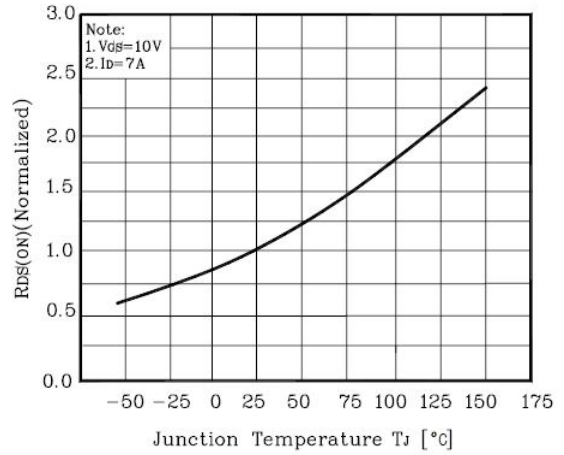


Fig. 9 $I_D - T_C$

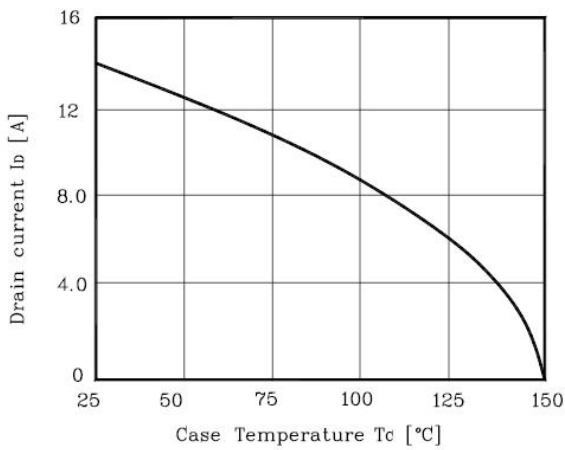


Fig. 10 Safe Operating Area

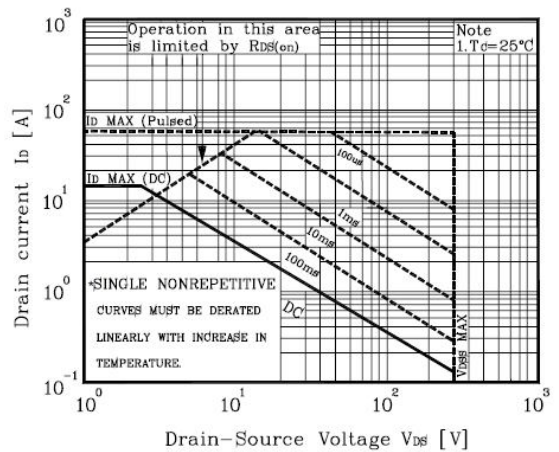


Fig. 11 Gate Charge Test Circuit & Waveform

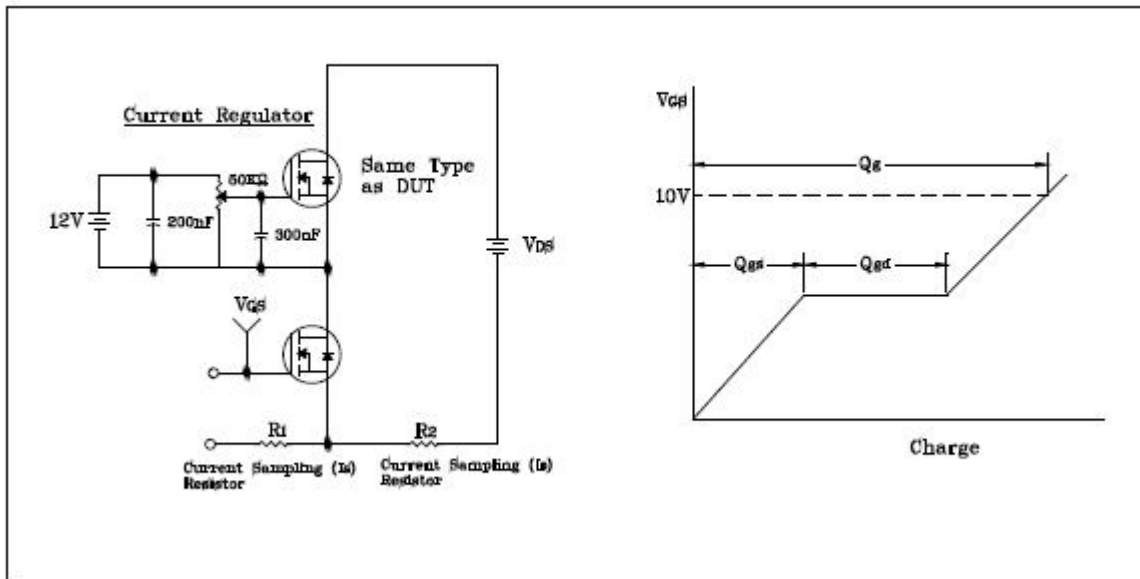


Fig. 12 Resistive Switching Test Circuit & Waveform

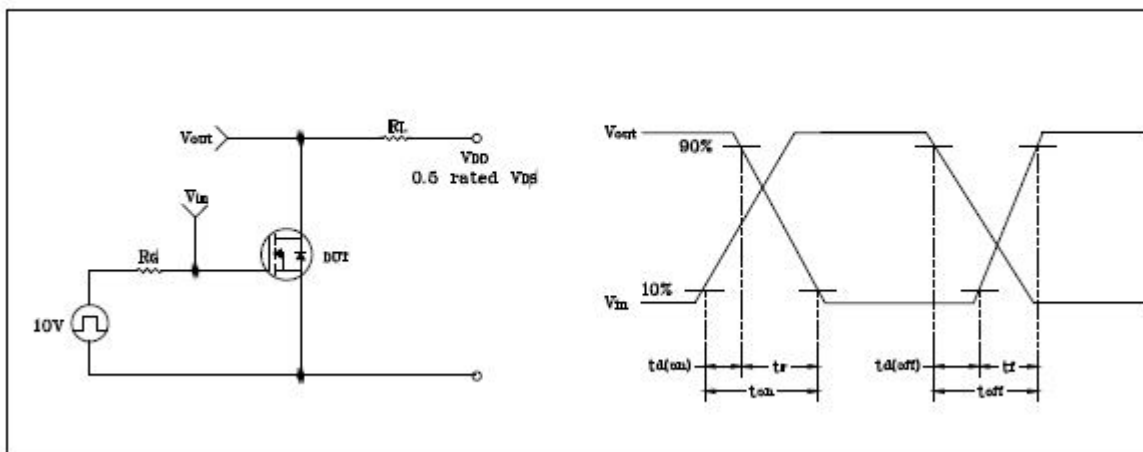


Fig. 13 E_{AS} Test Circuit & Waveform

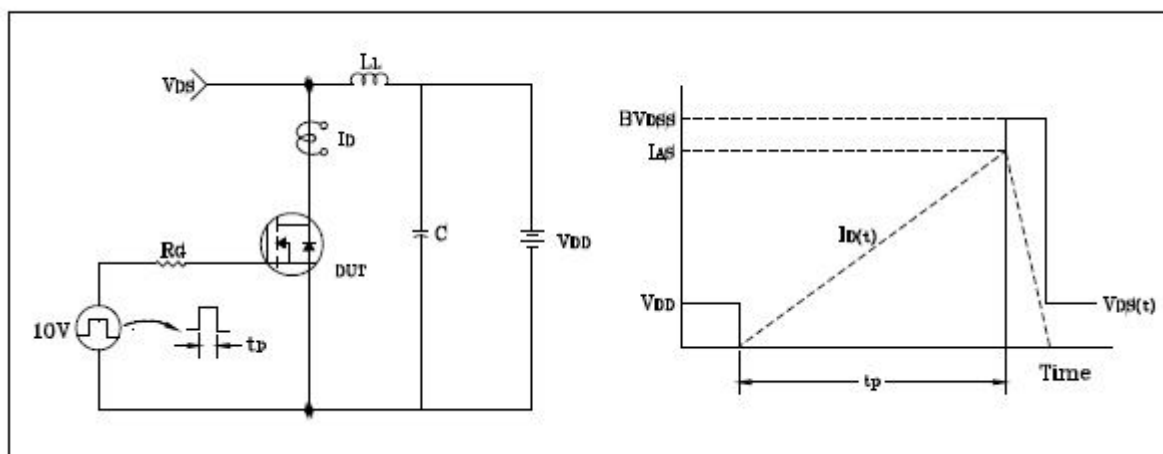
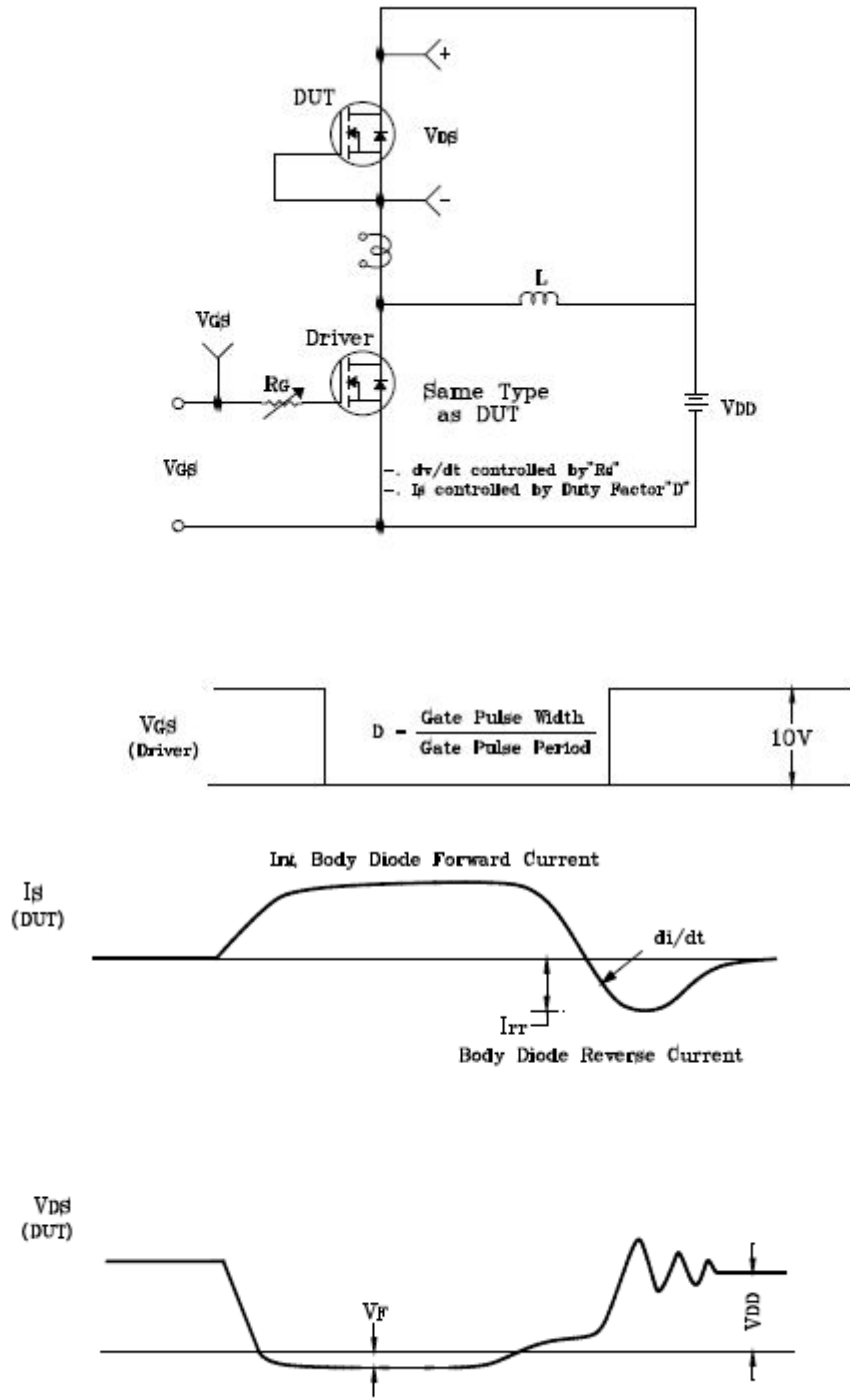


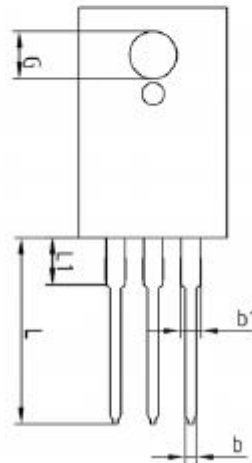
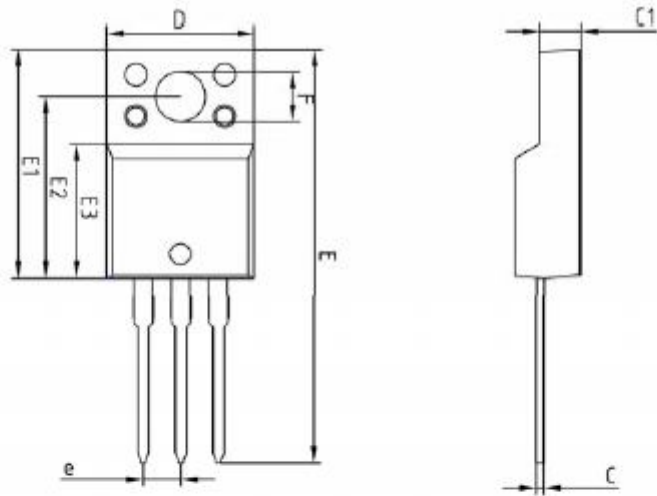
Fig. 14 Diode Reverse Recovery Time Test Circuit & Waveform



KMK1430F

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			

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