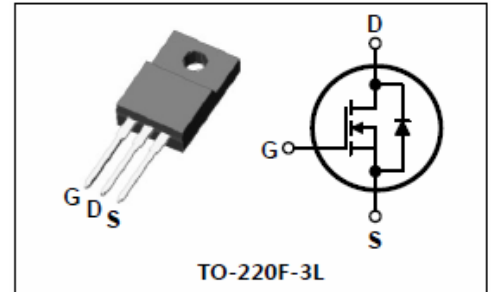


SWITCHING REGULATOR APPLICATIONS

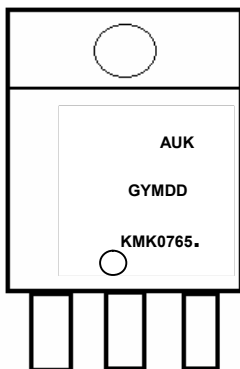
PIN Connection

Features

- High Voltage : $BV_{DSS}=650V(\text{Min.})$
- Low C_{rss} : $C_{rss}=10pF(\text{Typ.})$
- Low gate charge : $Q_g=21nC(\text{Typ.})$
- Low $R_{DS(on)}$: $R_{DS(on)}=1.4\Omega(\text{Max.})$


Ordering Information

Type NO	Marking	Package code
KMK0765F	KMK0765.	TO-220F-3L
KMK0765F (HF)	KMK0765.	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}	650	V	
Gate-source voltage	V_{GSS}	± 30	V	
Drain current (DC) *	I_D	$T_c=25^\circ\text{C}$	7	A
		$T_c=100^\circ\text{C}$	3.4	A
Drain current (Pulsed)*	I_{DM}	28	A	
Power dissipation	P_D	40	W	
Avalanche current (Single) ②	I_{AS}	7	A	
Single pulsed avalanche energy ②	E_{AS}	201	mJ	
Avalanche current (Repetitive) ①	I_{AR}	7	A	
Repetitive avalanche energy ①	E_{AR}	14.7	mJ	
Junction temperature	T_j	150	°C	
Storage temperature range	T_{stg}	-55~150		

* Limited by maximum junction temperature

Characteristic		Symbol	Typ.	Max	Unit
Thermal resistance	Junction-case	$R_{th(J-C)}$	-	3.12	$^{\circ}C/W$
	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}	$I_D=250\mu A, V_{GS}=0V$	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	$R_{DS(on)}$	$V_{GS}=10V, I_D=3.5A$	-	1.2	1.4	Ω
Forward transfer conductance ④	g_{fs}	$V_{DS}=10V, I_D=3.5A$	-	8.1	-	S
Input capacitance	C_{iss}	$V_{GS}=0V, V_{DS}=25V$ $f=1MHz$	-	1006	1258	pF
Output capacitance	C_{oss}		-	98	123	
Reverse transfer capacitance	C_{rss}		-	10	15	
Turn-on delay time	$t_{d(on)}$	$V_{DD}=300V, I_D=7.0A$ $R_G=25\Omega$	-	18	-	ns
Rise time	t_r		-	19	-	
Turn-off delay time	$t_{d(off)}$		-	72	-	
Fall time	t_f		-	28	-	
Total gate charge	Q_g	$V_{DS}=520V, V_{GS}=10V$ $I_D=7.0A$	-	21	27	nC
Gate-source charge	Q_{gs}		-	6	-	
Gate-drain charge	Q_{gd}		-	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	-	-	7	A
Source current (Pulsed) ①	I_{SM}		-	-	28	
Forward voltage ④	V_{SD}	$V_{GS}=0V, I_S=7.0A$	-	-	1.4	V
Reverse recovery time	t_{rr}	$I_S=7.0A, V_{GS}=0V$ $dI_F/dt=100A/\mu s$	-	365	-	ns
Reverse recovery charge	Q_{rr}		-	3.4	-	μC

Note ;

- ① Repetitive rating : Pulse width limited by maximum junction temperature
- ② $L=7.6mH, I_{AS}=7.0A, V_{DD}=50V, R_G=25\Omega, \text{Starting } T_J=25^{\circ}C$
- ③ Pulse Test : Pulse width $\leq 300\mu s$, Duty cycle $\leq 2\%$
- ④ Essentially independent of operating temperature

Electrical Characteristic Curves

Fig. 1 $I_D - V_{DS}$

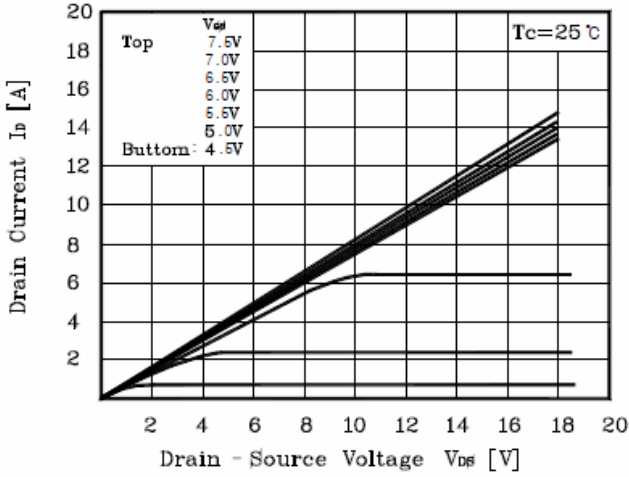


Fig. 2 $I_D - V_{GS}$

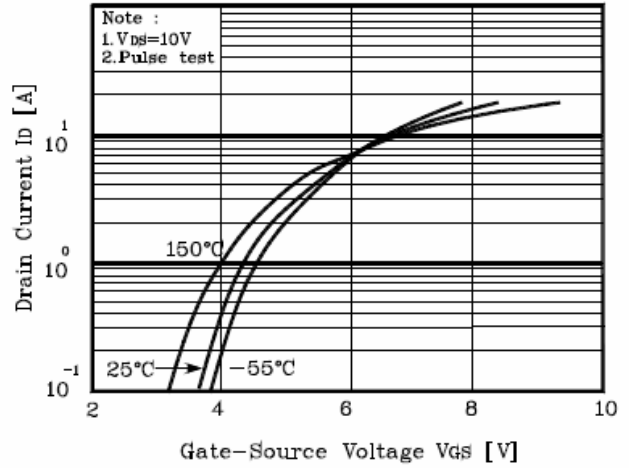


Fig. 3 $R_{DS(on)} - I_D$

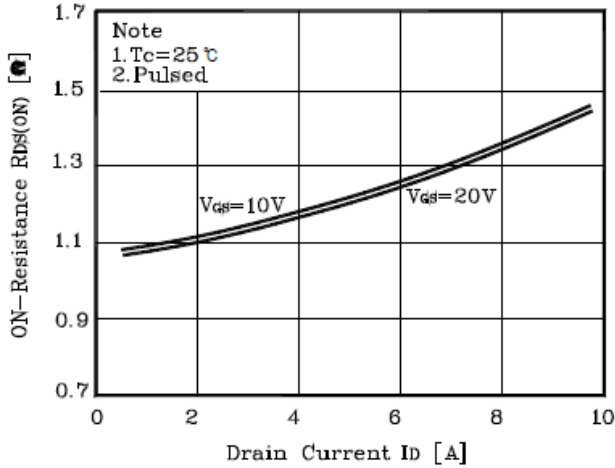


Fig. 4 $I_S - V_{SD}$

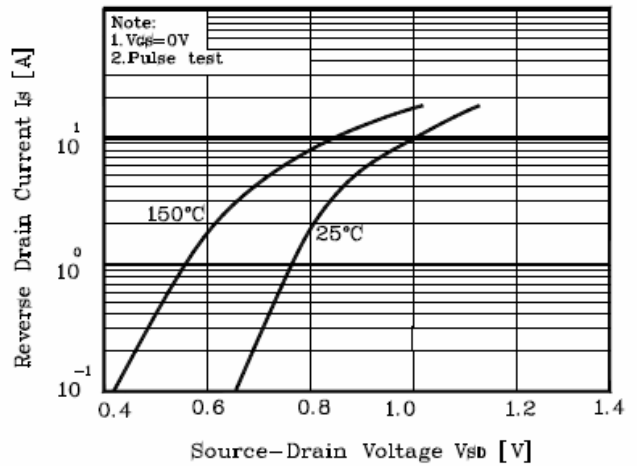


Fig. 5 Capacitance - V_{DS}

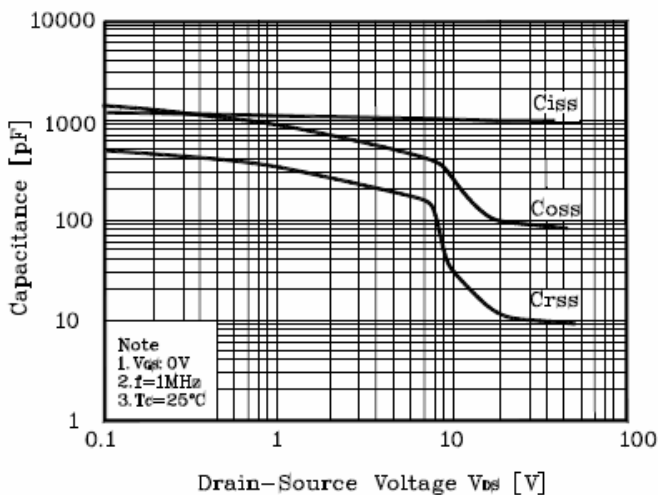
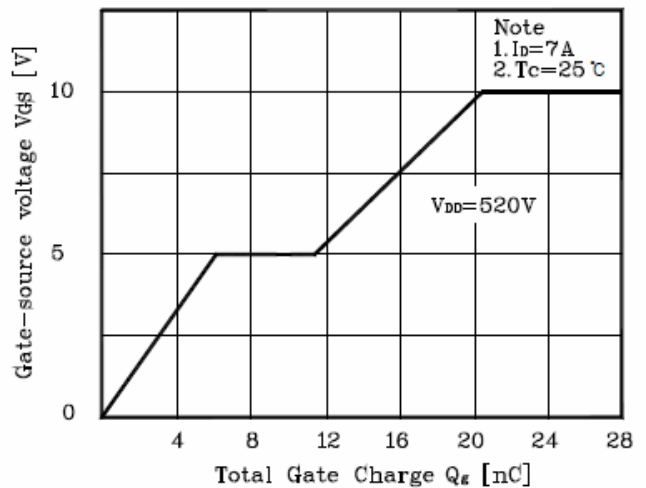


Fig. 6 $V_{GS} - Q_G$



Electrical Characteristic Curves

Fig. 7 $V_{DSS} - T_J$

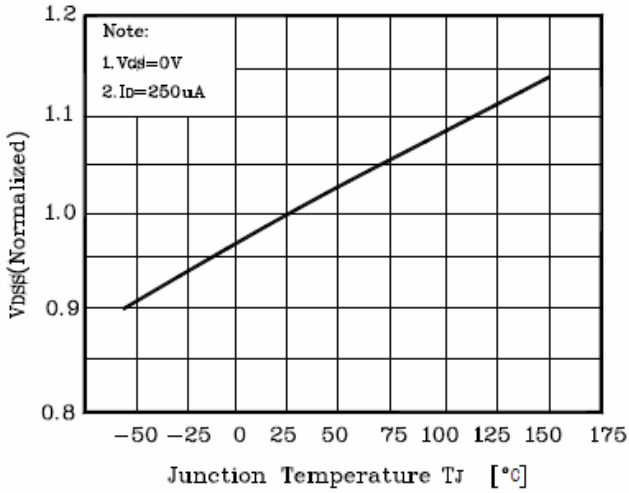


Fig.8 $R_{DS(on)} - T_J$

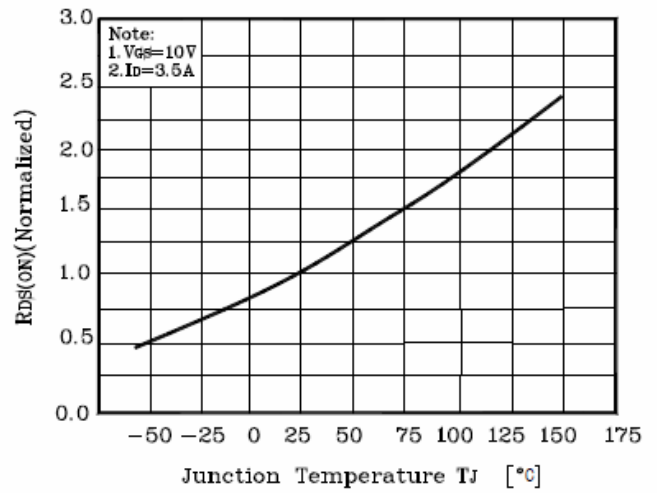


Fig. 9 $I_D - T_C$

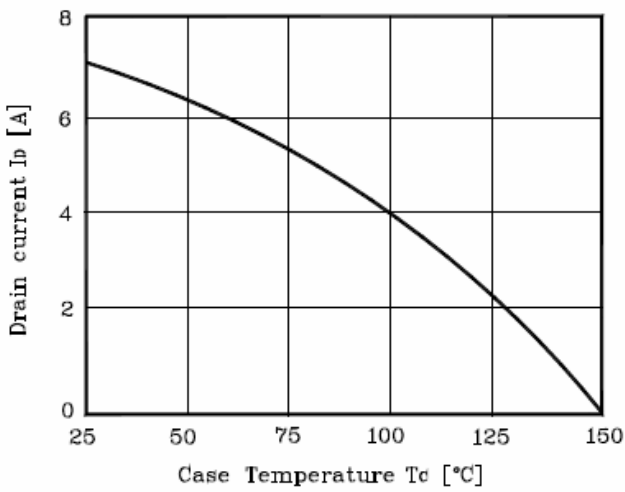


Fig. 10 Safe Operating Area

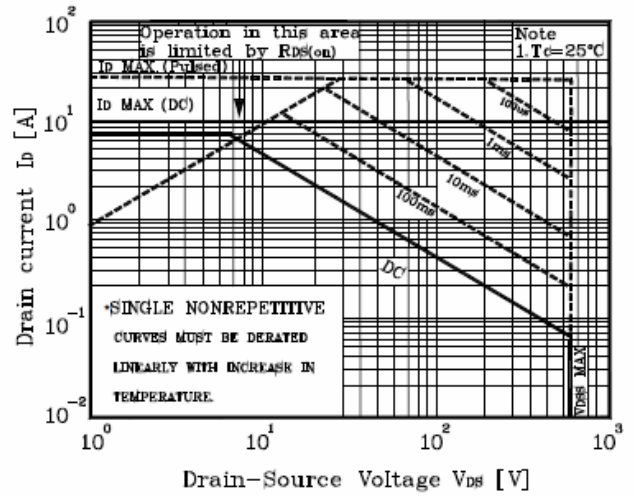


Fig. 11 Gate Charge Test Circuit & Waveform

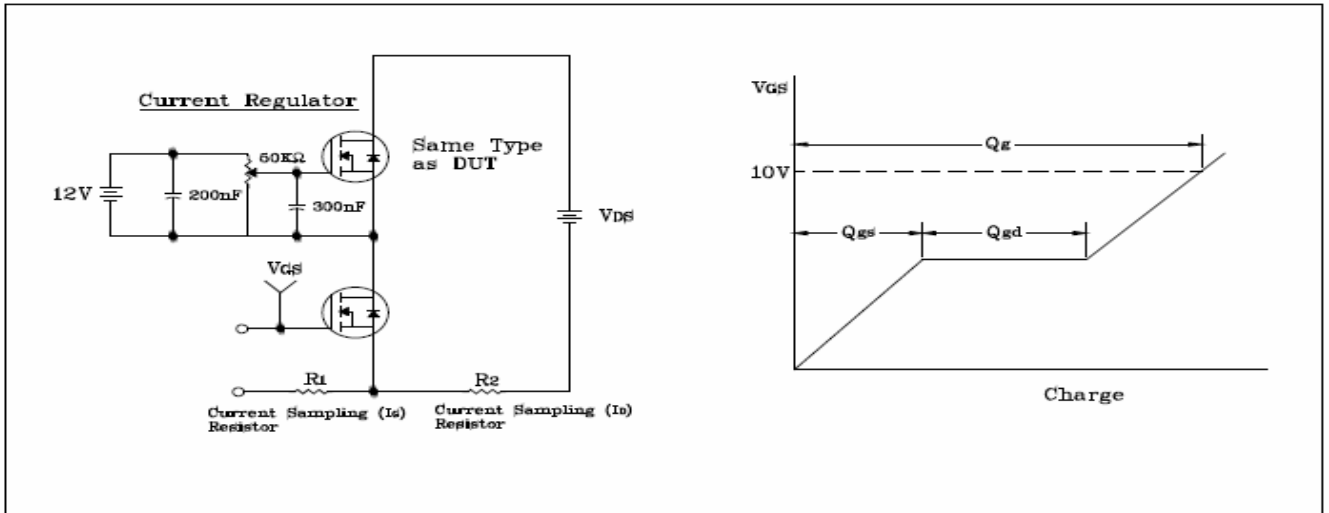


Fig. 12 Resistive Switching Test Circuit & Waveform

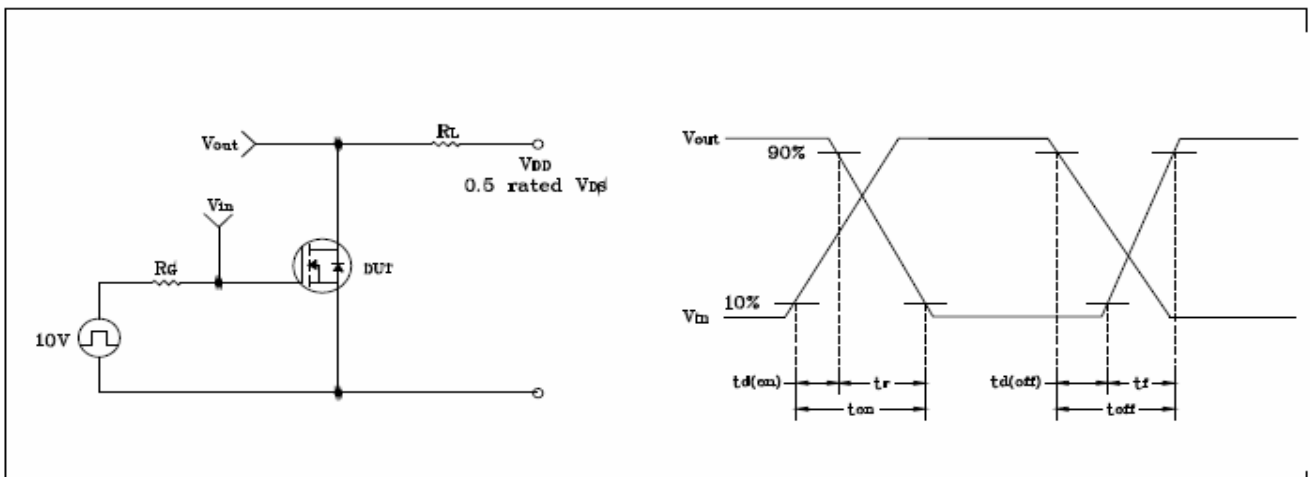


Fig. 13 EAS Test Circuit & Waveform

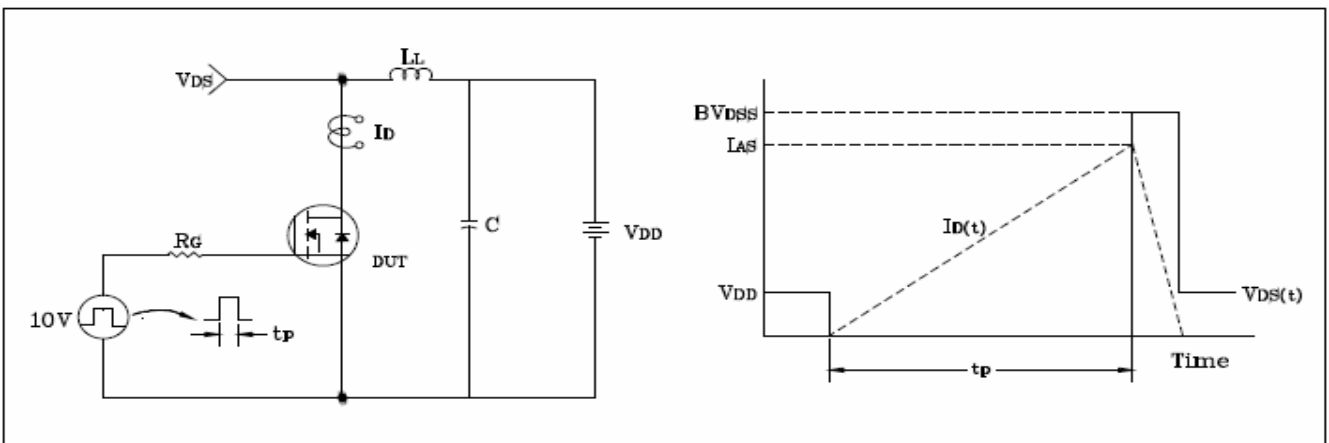
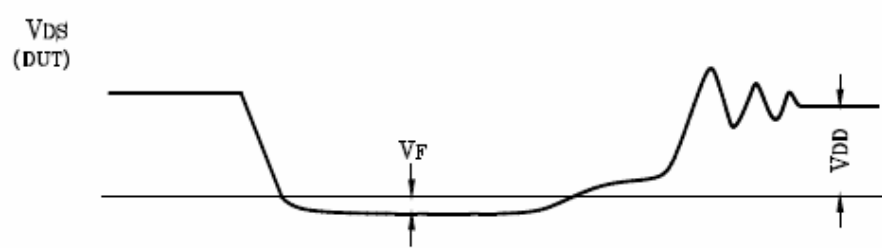
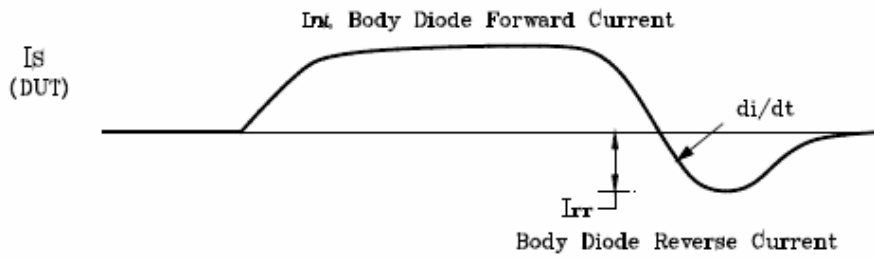
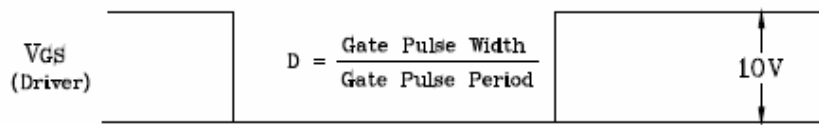
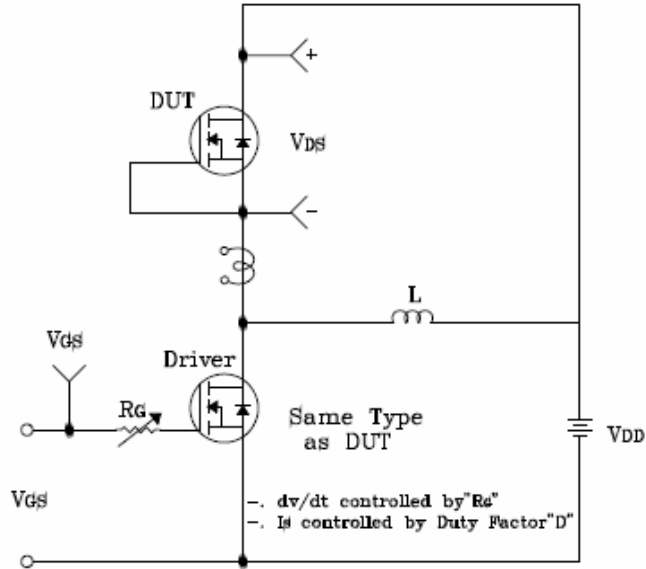
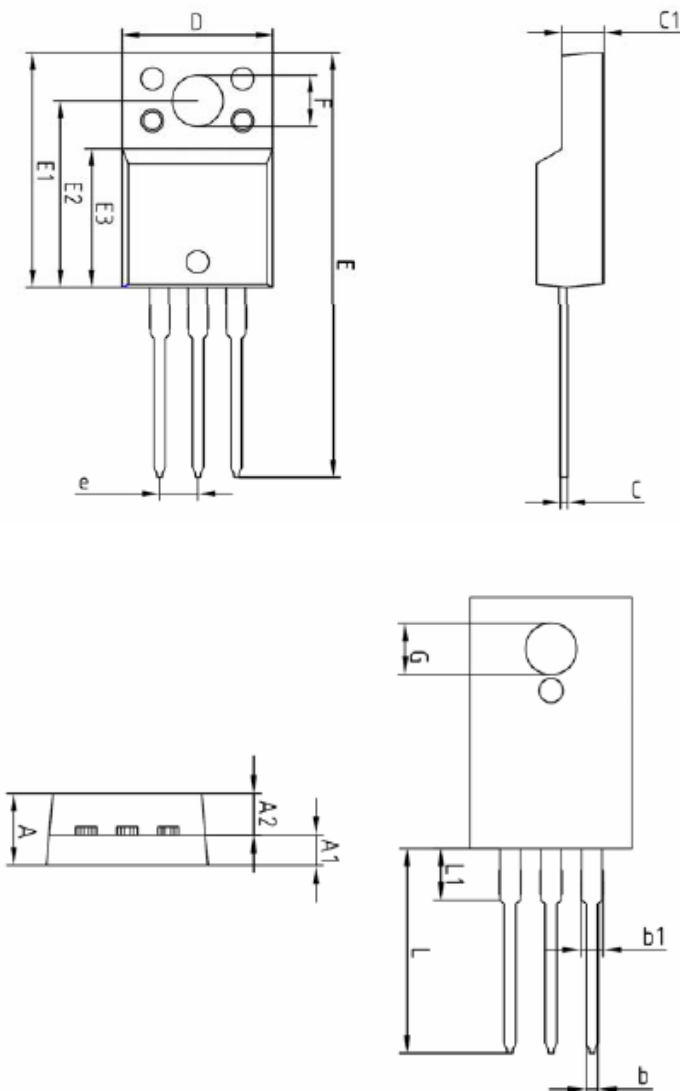


Fig. 14 Diode Reverse Recovery Time Test Circuit & Waveform



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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