AUK Semiconductor

SMK0260I

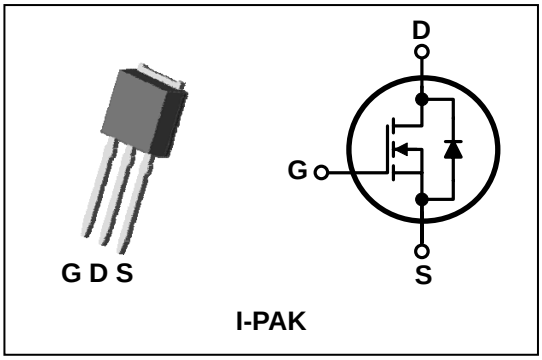
Advanced N-Ch Power MOSFET

SWITCHING REGULATOR APPLICATIONS

Features

- High Voltage: BV_{DSS}=600V(Min.)
- Low C_{rss} : C_{rss}=3.4pF(Typ.)
- Low gate charge : Qg=7.0nC(Typ.)
- Low $R_{DS(on)}$:$R_{DS(on)}$=4.7Ω(Max.)

PIN Connection



Ordering Information

Type No.	Marking	Package Code
SMK0260I	SMK0260	I-PAK

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

Characteristic	Symbol		Rating	Unit
Drain-source voltage	V_{DSS}		600	V
Gate-source voltage	V_{GSS}		±30	V
Drain current (DC) *	I_D	T_C=25℃	2.0	A
		T_C=100℃	1.35	A
Drain current (Pulsed) *	I_{DM}		8.0	A
Drain power dissipation	P_D		48	W
Avalanche current (Single) ②	I_{AS}		2.0	A
Single pulsed avalanche energy ②	E_{AS}		130	mJ
Avalanche current (Repetitive) ①	I_{AR}		2.0	A
Repetitive avalanche energy ①	E_{AR}		5.6	mJ
Junction temperature	T_J		150	°C
Storage temperature range	T_{stg}		-55~150	°C

* Limited by maximum junction temperature

Characteristic		Symbol	Typ.	Max	Unit
Thermal resistance	Junction-case	$R_{th(J-C)}$	-	2.6	℃/W
	Junction-ambient	$R_{th(J-A)}$	-	62.5	

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

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Drain-source breakdown voltage	$V_{(BR)DSS}$	I_D=250 ㎂, V_{GS}=0V	600	-	-	V
Gate threshold voltage	$V_{GS(th)}$	I_D=250 ㎂, V_{GS}= V_{DS}	2.0	-	4.0	V
Drain-source cut-off current	I_{DSS}	V_{DS}=600V, V_{GS}=0V	-	-	1	㎂
		V_{DS}=600V, V_{GS}=0V, T_C=125℃			200	
Gate leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±30V	-	-	±100	nA
Drain-source on-resistance ④	$R_{DS(on)}$	V_{GS}=10V, I_D=1.0A	-	3.9	4.7	Ω
Forward transfer conductance ④	g_{fs}	V_{DS}=10V, I_D=1.0A	-	5	-	S
Input capacitance	C_{iss}	V_{GS}=0V, V_{DS}=25V f=1 MHz	-	250	334	pF
Output capacitance	C_{oss}		-	20	27	
Reverse transfer capacitance	C_{rss}		-	3.4	4.6	
Turn-on delay time	$t_{d(on)}$	V_{DD}=300V, I_D=2.0A R_G=25Ω ③④	-	9	-	ns
Rise time	t_r		-	25	-	
Turn-off delay time	$t_{d(off)}$		-	24	-	
Fall time	t_f		-	28	-	
Total gate charge	Q_g	V_{DS}=480V, V_{GS}=10V I_D=2.0A ③④	-	7.0	9.5	nC
Gate-source charge	Q_{gs}		-	1.5	-	
Gate-drain charge	Q_{gd}		-	4.7	-	

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

Characteristic	Symbol	Test Condition	Min	Typ	Max	Unit
Source current (DC)	I_S	Integral reverse diode in the MOSFET	-	-	2.0	A
Source current (Pulsed) ①	I_{SP}		-	-	8.0	
Forward voltage ④	V_{SD}	V_{GS}=0V, I_S=2.0A	-	-	1.4	V
Reverse recovery time	t_{rr}	I_S=2.0A, V_{GS}=0V dI$_S$/dt=100A/㎲	-	230	-	ns
Reverse recovery charge	Q_{rr}		-	1.0	-	μC

Note ;

① Repetitive rating : Pulse width limited by maximum junction temperature

② L=59.5mH, I_{AS}=2.0A, V_{DD}=50V, R_G=25Ω , Starting T_J = 25℃

③ Pulse Test : Pulse width≤ 300 ㎲, Duty cycle≤ 2%

④ Essentially independent of operating temperature

Electrical Characteristic Curves

Fig. 1 I_D - V_{DS}

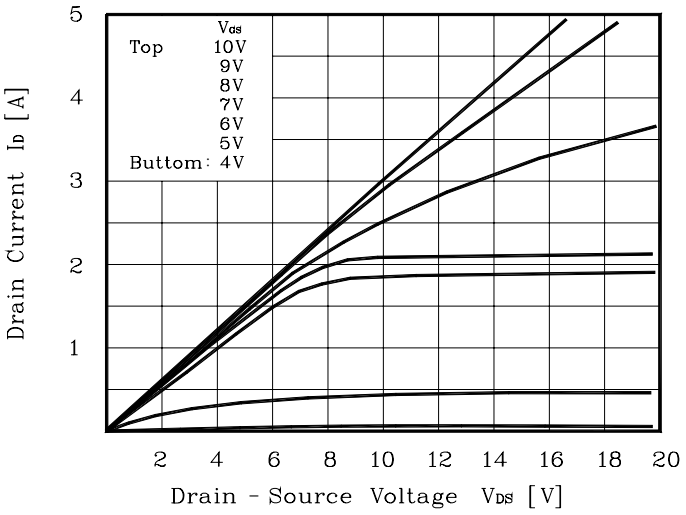


Fig. 2 I_D - V_{GS}

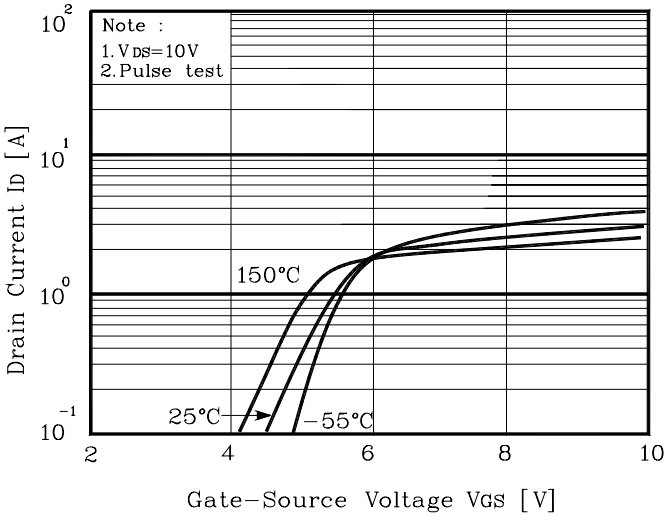


Fig. 3 $R_{DS(on)}$ - I_D

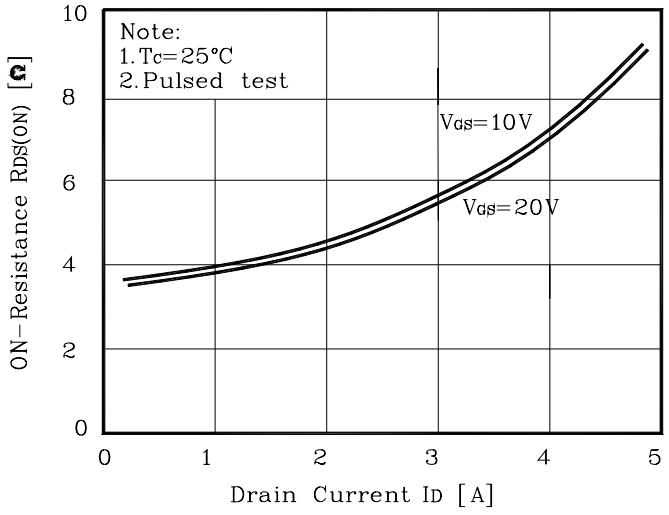


Fig. 4 I_S - V_{SD}

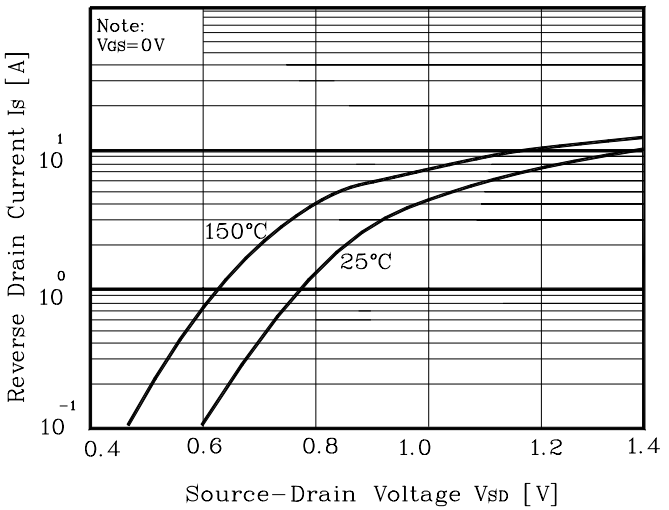


Fig. 5 Capacitance - V_{DS}

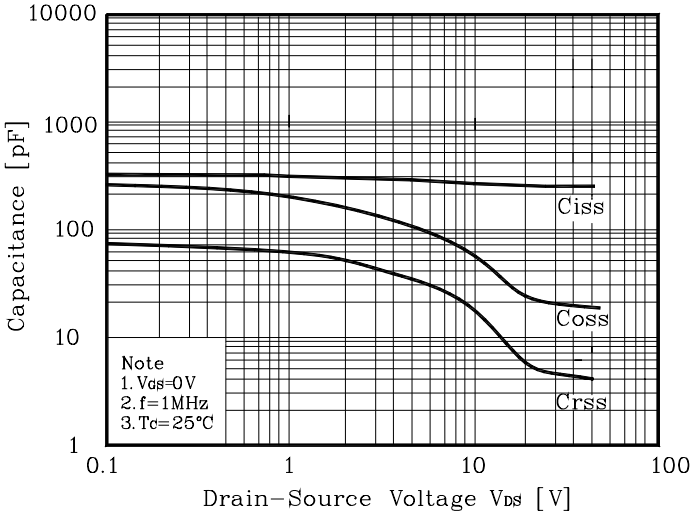
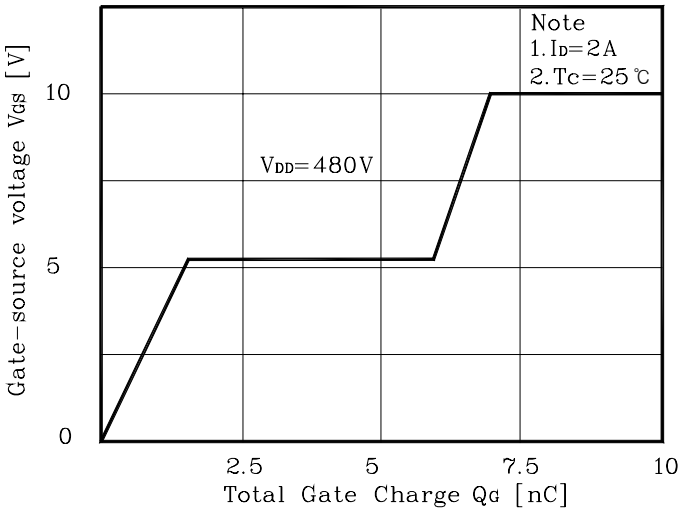


Fig. 6 V_{GS} - Q_G



Electrical Characteristic Curves

Fig. 7 V_{DSS} - T_J

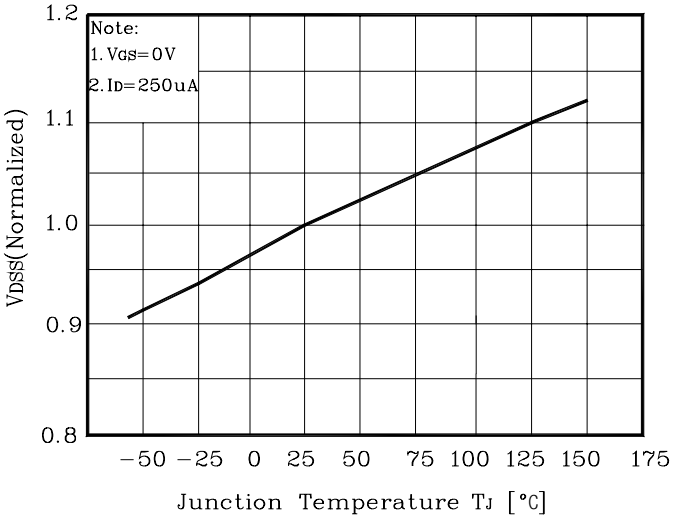


Fig. 8 $R_{DS(on)}$ - T_J

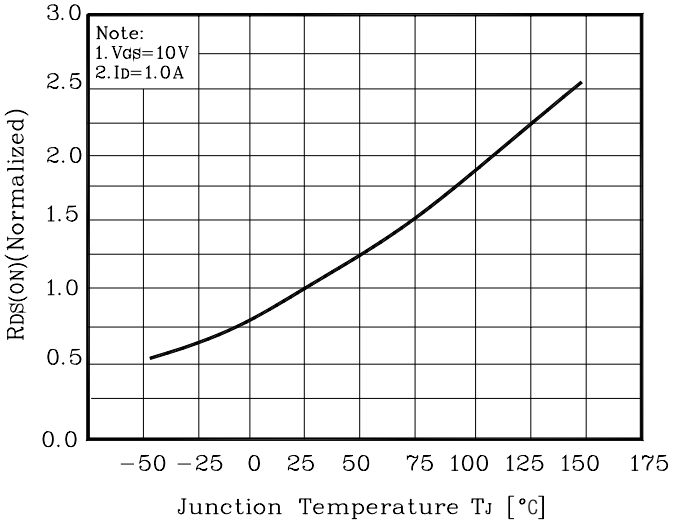


Fig. 9 I_D - T_C

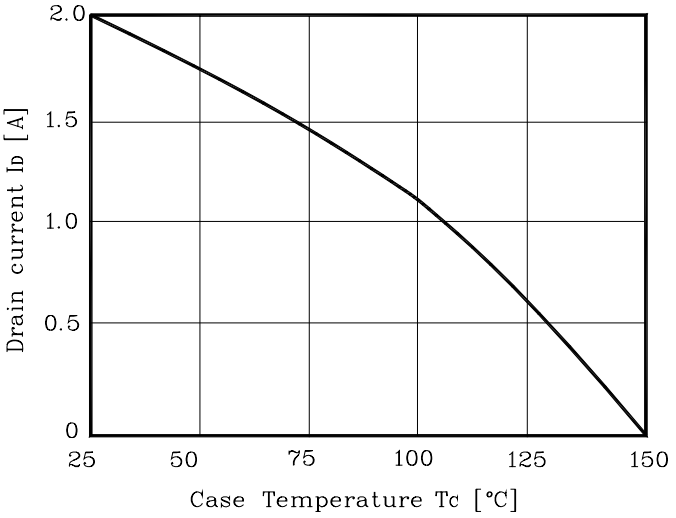


Fig. 10 Safe Operating Area

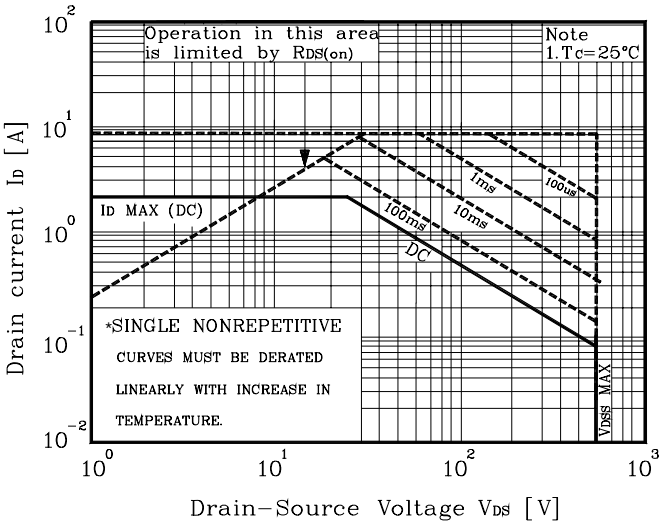


Fig. 11 Gate Charge Test Circuit & Waveform

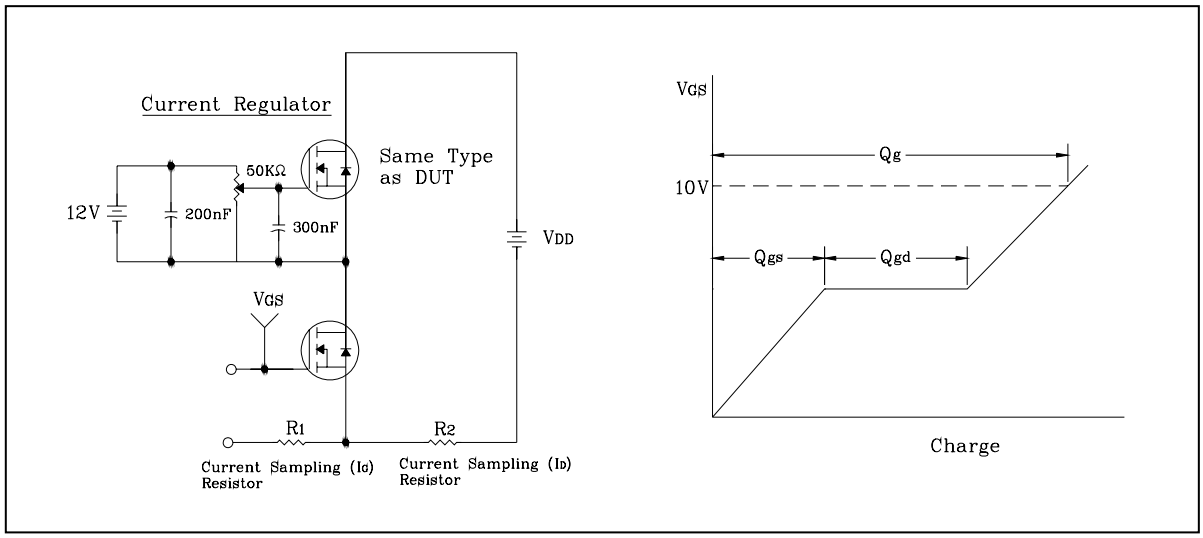


Fig. 12 Resistive Switching Test Circuit & Waveform

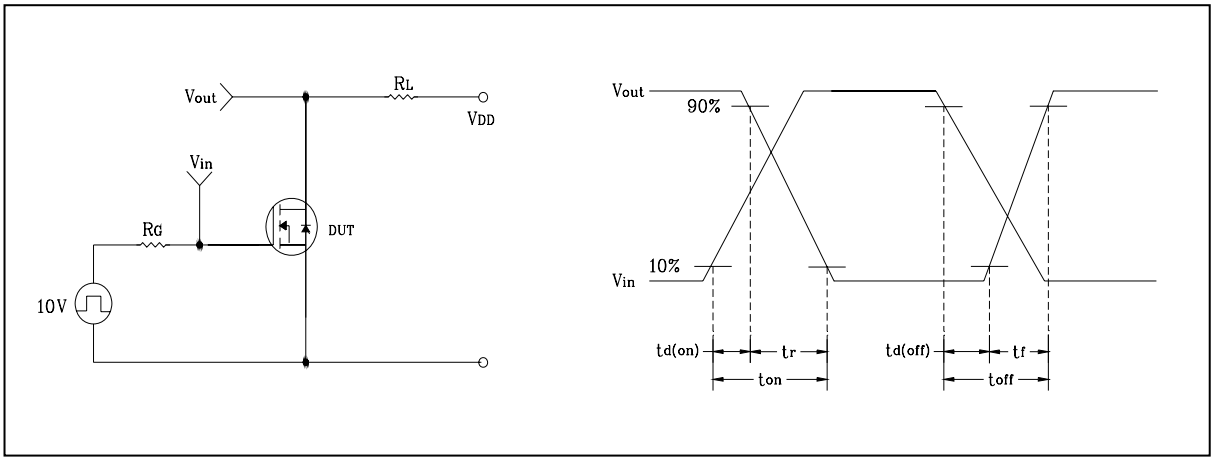


Fig. 13 E_{AS} Test Circuit & Waveform

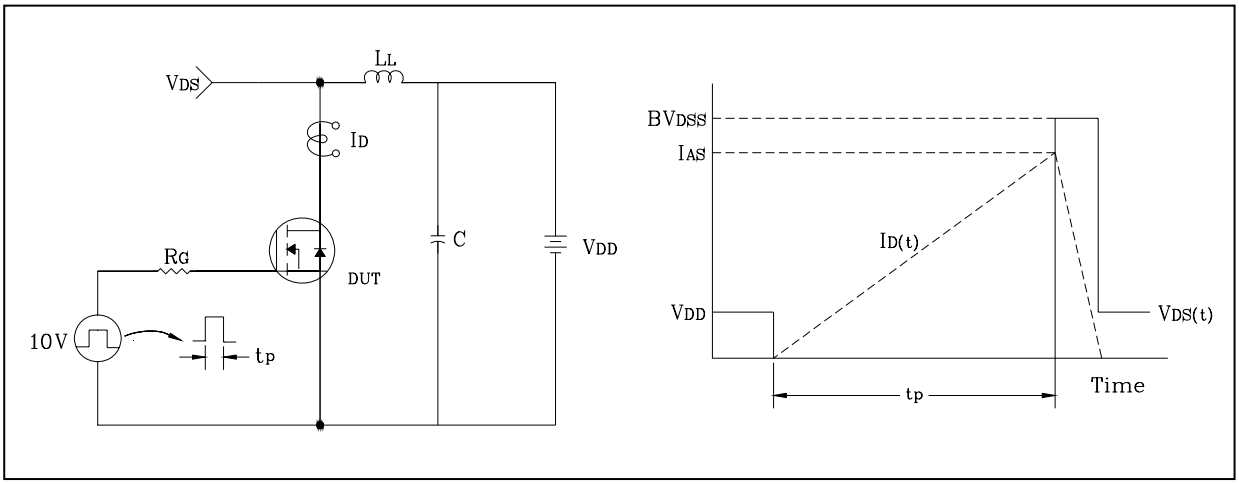
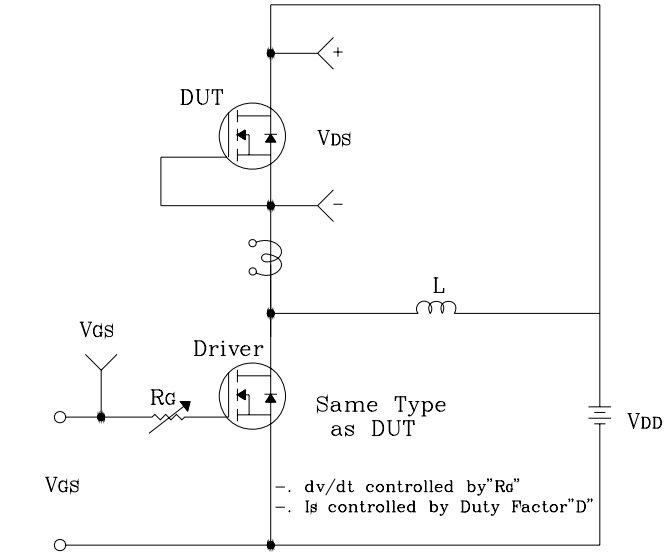
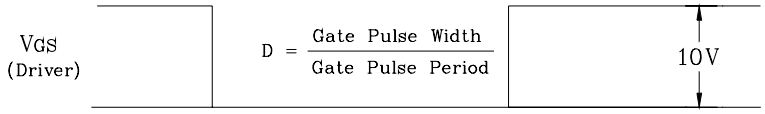
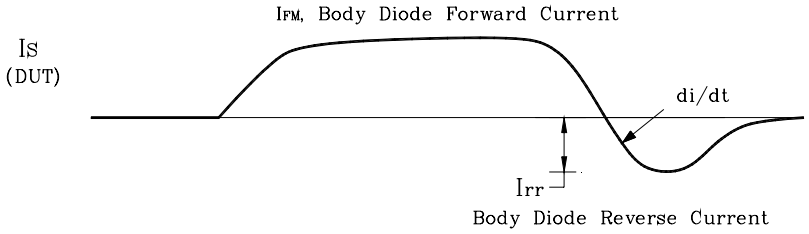
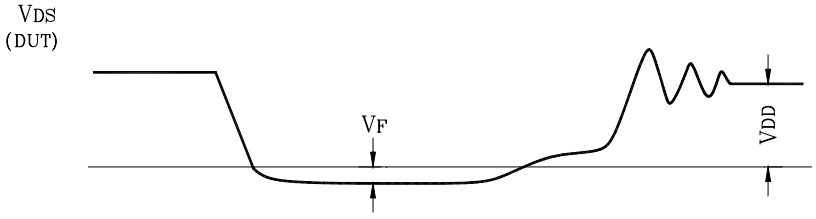


Fig. 14 Diode Reverse Recovery Time Test Circuit & Waveform

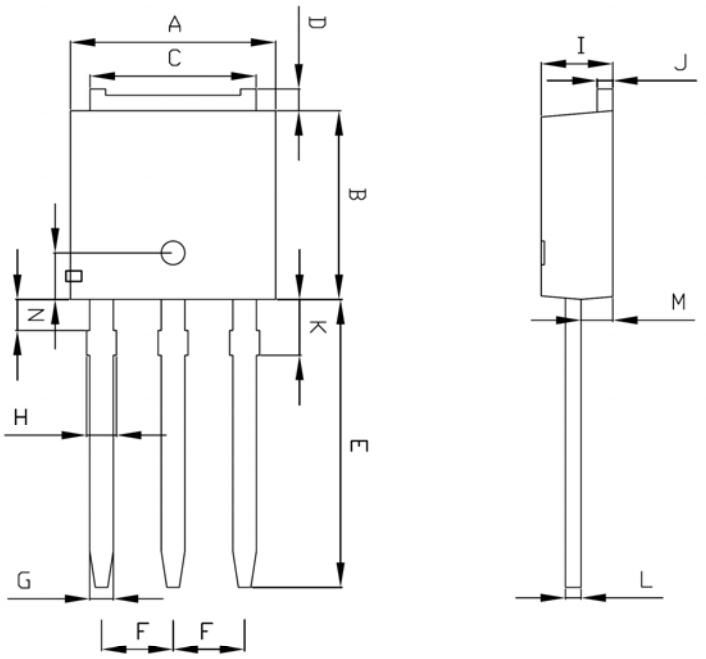








Outline Dimension



SYMBOL	MILLIMETERS			NOTE
	MINIMUM	NOMINAL	MAXIMUM	
A	6.40	6.60	6.80	
B	5.90	6.10	6.30	
C	5.04	5.34	5.64	
D	0.50	0.70	0.90	
E	9.00	9.30	9.60	
F	2.10	2.30	2.50	
G	0.66	0.76	0.86	
H	0.96 MAX			
I	2.20	2.30	2.40	
J	0.40	0.50	0.60	
K	1.60	1.80	2.00	
L	0.40	0.50	0.60	
M	0.72	1.02	1.32	
N	0.90	1.00	1.10	
O	1.50			

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