Elektronische Bauelemente

SID01N60

1.6A, 600V, $R_{DS(ON)}$ 8Ω

N-Channel Enhancement Mode Power Mos.FET

RoHS Compliant Product

Description

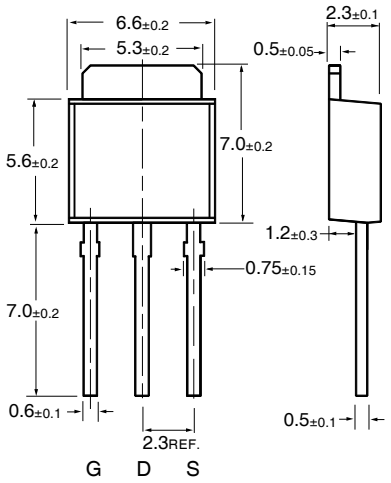
The SID01N60 provide the designer with the best combination of fast switching.

The TO-251 is universally preferred for all commercial-industrial surface mount applications and suited for AC/DC converters.

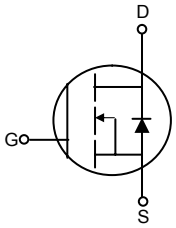
Features

* Dynamic dv/dt Rating
* Simple Drive Requirement
* Fast Switching
* Repetitive Avalanche Rated

TO-251



Dimensions in millimeters



Marking Code: 01N60

XXXX(Date Code)

Absolute Maximum Ratings

Parameter	Symbol	Ratings	Unit
Drain-Source Voltage	V_{DS}	600	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current, V_{GS}@10V	I_D@T_C=25°C	1.6	A
Continuous Drain Current, V_{GS}@10V	I_D@T_C=100°C	1	A
Pulsed Drain Current[1]	I_{DM}	6	A
Total Power Dissipation	P_D@T_C=25°C	39	W
Linear Derating Factor		0.31	W/°C
Single Pulse Avalanche Energy[2]	E_{AS}	13	mJ
Avalanche Current	I_{AR}	1.6	A
Repetitive Avalanche Energy	E_{AR}	0.5	mJ
Operating Junction and Storage Temperature Range	Tj, Tstg	-55~+150	°C

Thermal Data

Parameter		Symbol	Ratings	Unit
Thermal Resistance Junction-case	Max.	Rthj-c	3.2	°C/W
Thermal Resistance Junction-ambient	Max.	Rthj-a	110	°C/W

Electrical Characteristics(Tj=25°C Unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Drain-Source Breakdown Voltage	BV_{DSS}	600	–	–	V	V_{GS}=0V, I_D=250uA
Breakdown Voltage Temp. Coefficient	$\triangle BV_{DS}/\triangle Tj$	–	0.6	–	V/°C	Reference to 25°C, I_D=1mA
Gate Threshold Voltage	$V_{GS(th)}$	2.0	–	4.0	V	V_{DS}=V_{GS}, I_D=250uA
Gate-Source Leakage Current	I_{GSS}	–	–	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current (Tj=25°C)	I_{DSS}	–	–	100	uA	V_{DS}=600V, V_{GS}=0
Drain-Source Leakage Current(Tj=150°C)		–	–	500	uA	V_{DS}=480 V, V_{GS}=0
Static Drain-Source On-Resistance	$R_{DS(ON)}$	–	7.2	8.0	Ω	V_{GS}=10V, I_D=0.8A
Forward Transconductance	Gfs	–	0.8	–	S	V_{DS}=50V, I_D=0.8A
Total Gate Charge[3]	Qg	–	7.7	–	nC	I_D=1.6A V_{DS}=480V V_{GS}= 10V
Gate-Source Charge	Qgs	–	1.5	–		
Gate-Drain ("Miller") Charge	Qgd	–	2.6	–		
Turn-on Delay Time[3]	$Td_{(ON)}$	–	8	–	nS	V_{DD}=300V I_D=1.6A V_{GS}=10V R_G=10Ω R_D=187.5Ω
Rise Time	Tr	–	5	–		
Turn-off Delay Time	$Td_{(Off)}$	–	14	–		
Fall Time	T_f	–	7	–		
Input Capacitance	Ciss	–	286	–	pF	V_{GS}=0V V_{DS}=25V f=1.0MHz
Output Capacitance	Coss	–	25	–		
Reverse Transfer Capacitance	Crss	–	5	–		

Source-Drain Diode

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test Condition
Forward On Voltage[3]	V_{SD}	–	–	1.5	V	I_S=1.6A, V_{GS}=0V.Tj=25°C
Continuous Source Current(Body Diode)	I_S	–	–	1.6	A	V_D=V_G=0V, V_S=1.5 V
Pulsed Source Current(Body Diode)[1]	I_{SM}	–	–	6	A	

Notes: 1. Pulse width limited by safe operating area.

2. Staring Tj=25℃, V_{DD}=50V, L=10mH, R_G=25Ω, I_{AS}=1.6A.

3. Pulse width≦300us, duty cycle≦2%.

Characteristics Curve

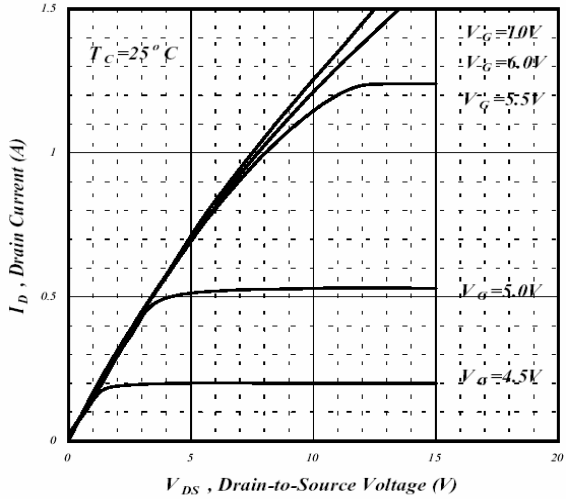


Fig 1. Typical Output Characteristics

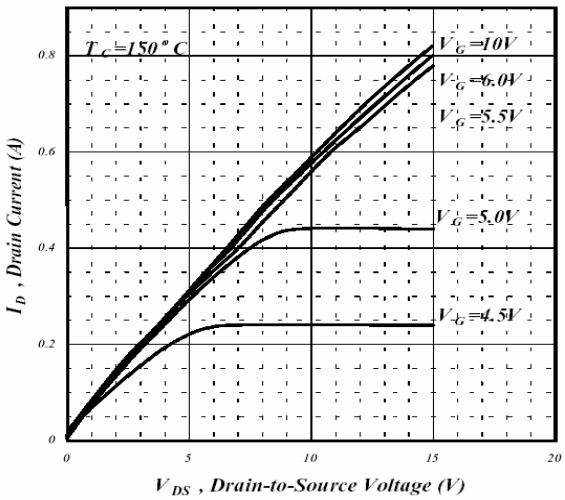


Fig 2. Typical Output Characteristics

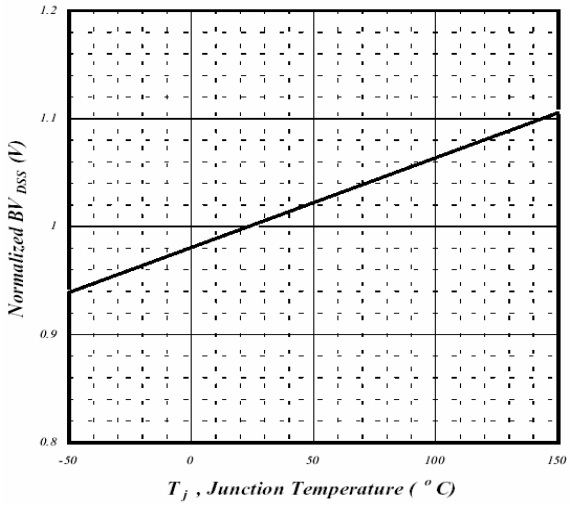


Fig 3. Normalized BVDSS v.s. Junction Temperature

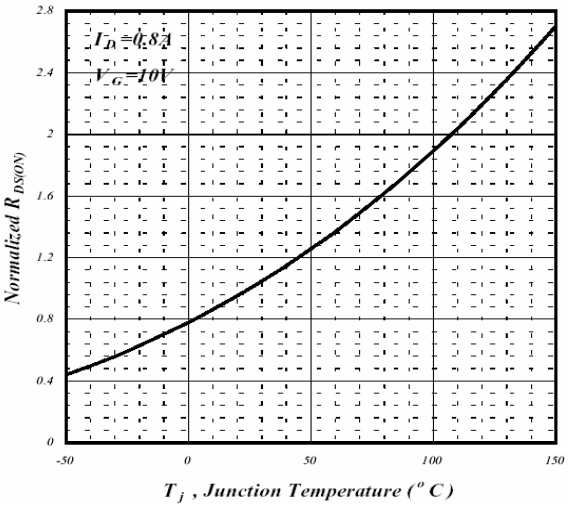


Fig 4. Normalized On-Resistance v.s. Junction Temperature

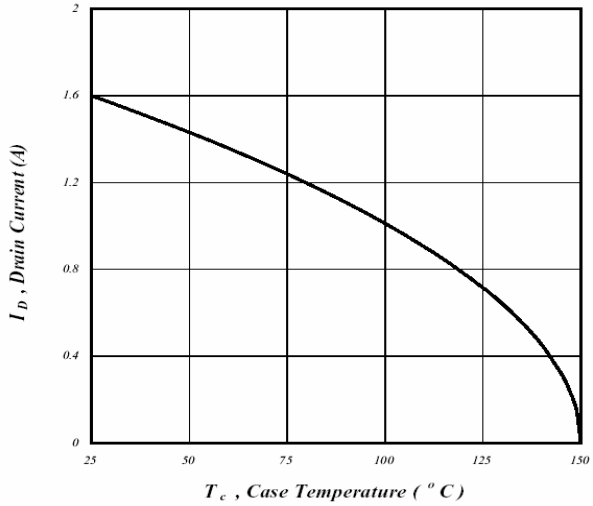


Fig 5. Maximum Drain Current v.s. Case Temperature

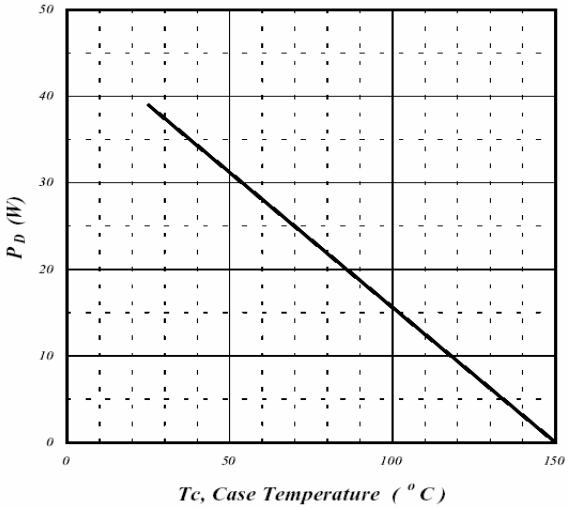


Fig 6. Type Power Dissipation

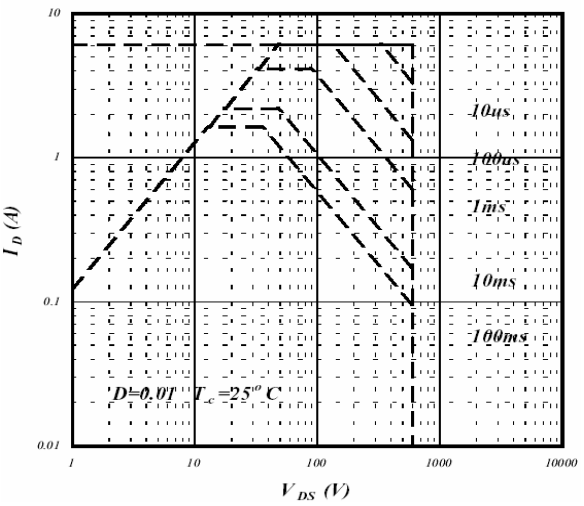


Fig 7. Maximum Safe Operating Area

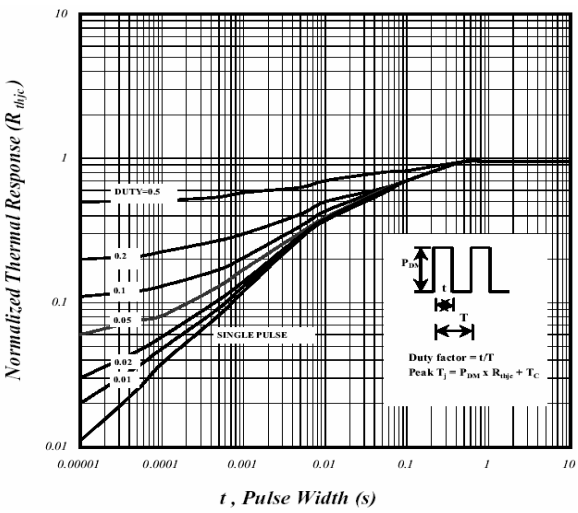


Fig 8. Effective Transient Thermal Impedance

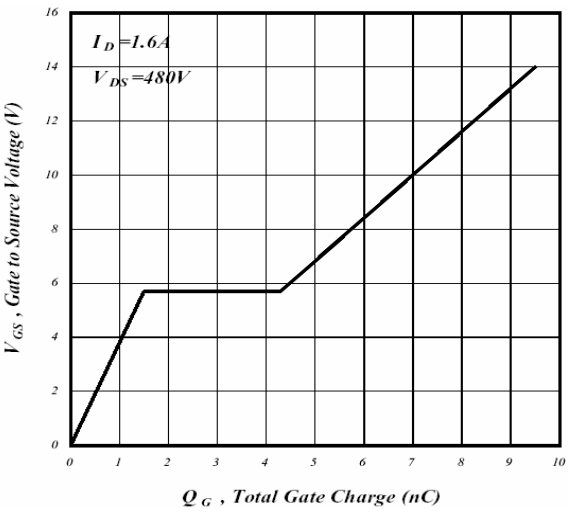


Fig 9. Gate Charge Characteristics

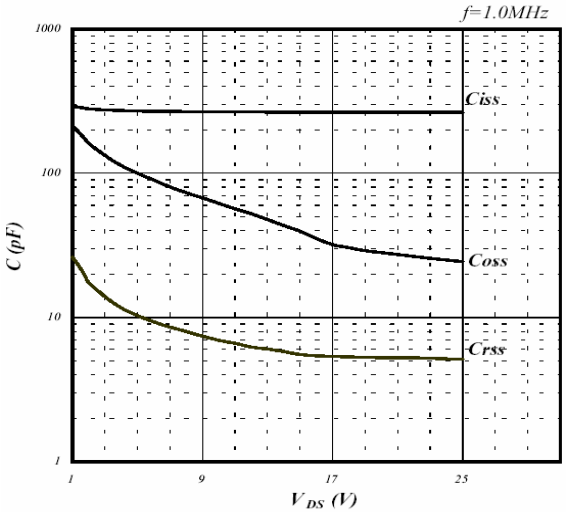


Fig 10. Typical Capacitance Characteristics

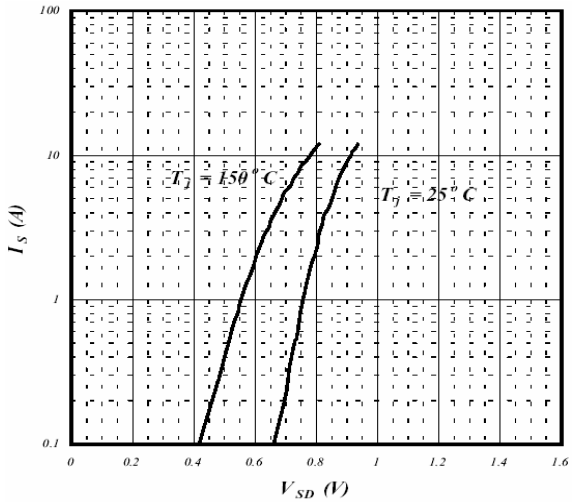


Fig 11. Forward Characteristics of Reverse Diode

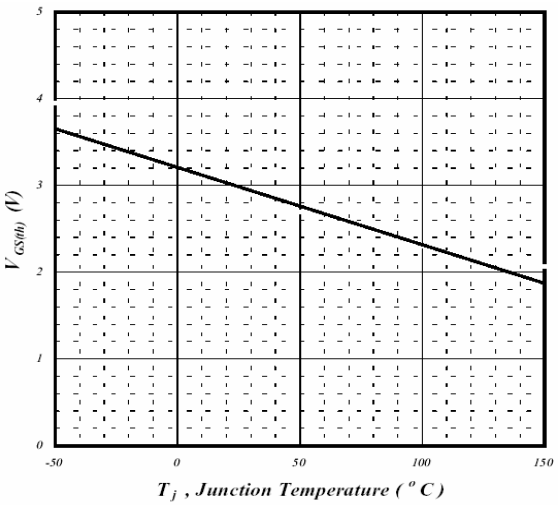


Fig 12. Gate Threshold Voltage v.s. Junction Temperature

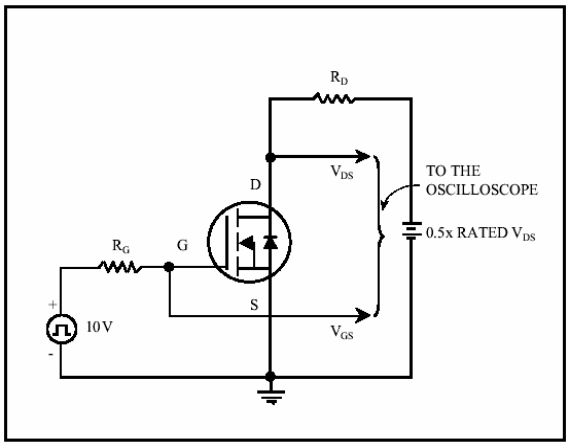


Fig 13. Switching Time Circuit

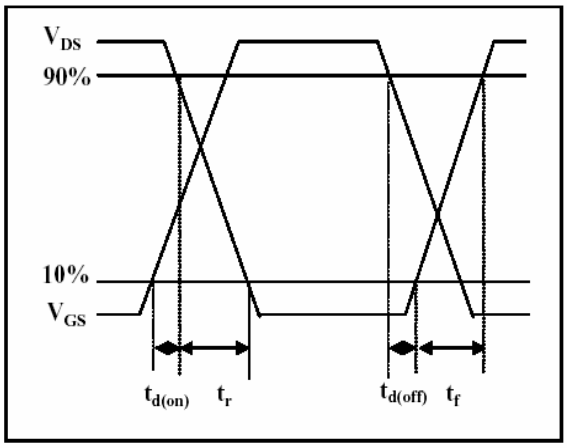


Fig 14. Switching Time Waveform

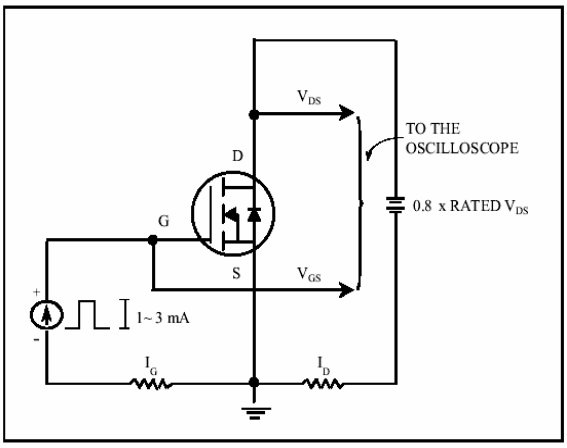


Fig 15. Gate Charge Circuit

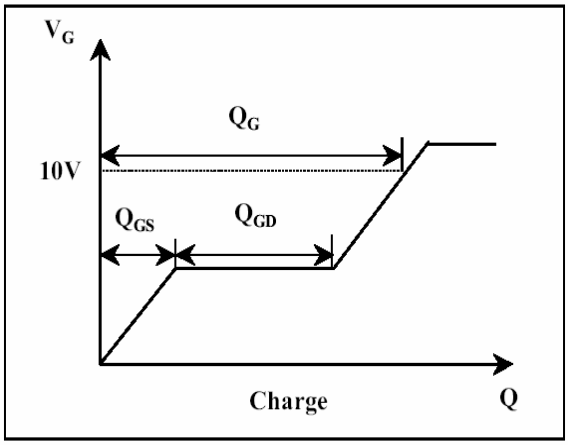


Fig 16. Gate Charge Waveform