Elektronische Bauelemente

SID15N10

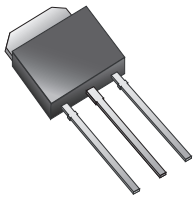
15A, 100V, $R_{DS(ON)}$ 110mΩ
N-Ch Enhancement Mode Power MOSFET

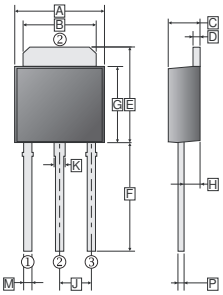
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SID15N10 provide the designer with the best combination of fast switching. The TO-251 package is universally preferred for all commercial-industrial surface mount applications. The device is suited for charger, industrial and consumer environment.

TO-251



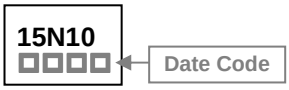


REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.40	6.80	G	5.40	5.80
B	5.20	5.50	H	0.90	1.50
C	2.20	2.40	J	2.30	
D	0.45	0.55	K	0.60	0.90
E	6.80	7.20	M	0.50	0.70
F	7.20	7.80	P	0.45	0.60

FEATURES

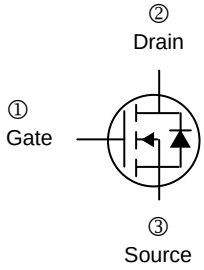
- $R_{DS(on)} \leqq$ 100mΩ @ V_{GS} = 10V
- Super high density cell design for extremely low $R_{DS(on)}$
- Exceptional on-resistance and maximum DC current capability

MARKING



PACKAGE INFORMATION

Package	MPQ	Leader Size
TO-251	2.5K	13' inch



ABSOLUTE MAXIMUM RATINGS (T_A = 25°C unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	100	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C=25℃	I_D	15	A
	T_C=70℃		13.8	A
Pulsed Drain Current [1]		I_{DM}	24	A
Power Dissipation	T_C=25℃	P_D	34.7	W
	T_A=25℃		2	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 ~ 150	℃
Thermal Resistance Ratings				
Maximum Thermal Resistance Junction-Ambient (PCB mount) [3]		$R_{\theta JA}$	62.5	℃ / W
Maximum Thermal Resistance Junction-Case[3]		$R_{\theta JC}$	3.6	℃ / W

ELECTRICAL CHARACTERISTICS (T_A = 25°C unless otherwise specified)

Parameter	Symbol	Min.	Typ.	Max.	Unit	Test conditions
Drain-Source Breakdown Voltage	BV_{DSS}	100	-	-	V	V_{GS}=0, I_D=250μA
Gate Threshold Voltage	$V_{GS(th)}$	1	-	2.5	V	V_{DS}=V_{GS}, I_D=250μA
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±20V
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=80V, V_{GS}=0
Static Drain-Source On-Resistance [2]	$R_{DS(ON)}$	-	100	110	mΩ	V_{GS}=10V, I_D=8A
Total Gate Charge [2]	Q_g	-	26.2	-	nC	I_D=10A V_{DS}=80V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	4.6	-		
Gate-Drain (“Miller”) Change	Q_{gd}	-	5.1	-		
Turn-on Delay Time [2]	$T_{d(on)}$	-	4.2	-	nS	V_{DS}=50V I_D= 10A V_{GS}=10V R_L=5Ω R_G=3.3Ω
Rise Time	T_r	-	8.2	-		
Turn-off Delay Time	$T_{d(off)}$	-	35.6	-		
Fall Time	T_f	-	9.6	-		
Input Capacitance	C_{iss}	-	1535	-	pF	V_{GS}=0 V_{DS}=15V f=1.0MHz
Output Capacitance	C_{oss}	-	60	-		
Reverse Transfer Capacitance	C_{rss}	-	37	-		
Gate Resistance	R_g	-	2	-	Ω	f=1.0MHz
Source-Drain Diode						
Forward On Voltage [2]	V_{SD}	-	-	1.2	V	I_S=8.0A, V_{GS}=0V

Notes:
1. Pulse width limited by maximum junction temperature.
2. Pulse test.
3. Surface Mounted on 1 in_2 copper pad of FR4 Board.

CHARACTERISTICS CURVE

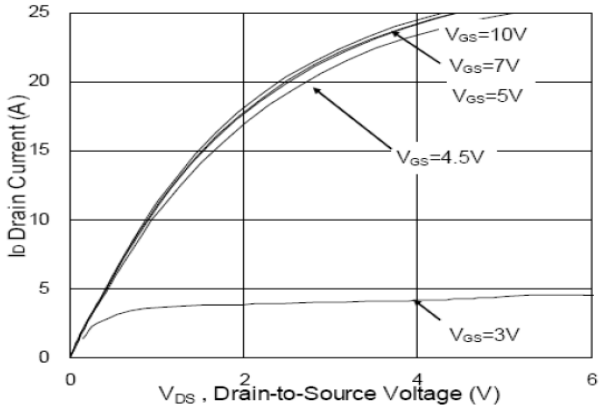


Fig 1. Typical Output Characteristics

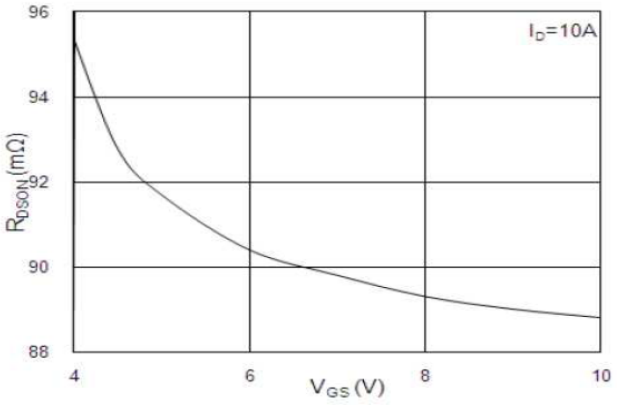


Fig 2. On-Resistance vs. Gate-Source

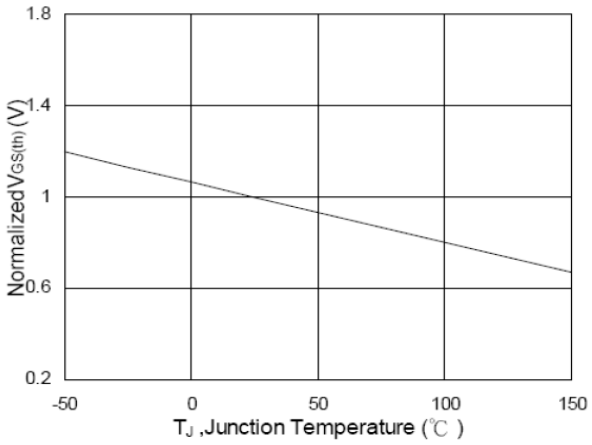


Fig 3. Gate Threshold Voltage vs. Junction Temperature

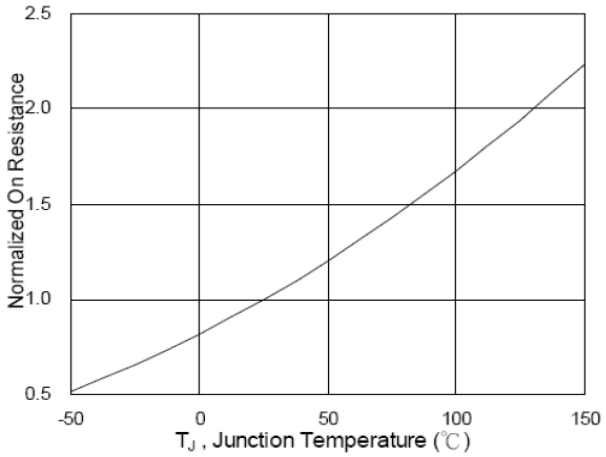


Fig 4. On-Resistance vs. Junction Temperature

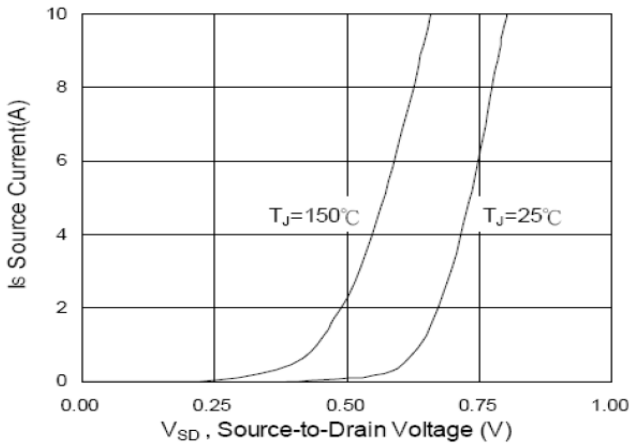


Fig 5. Forward Characteristics of Reverse Diode

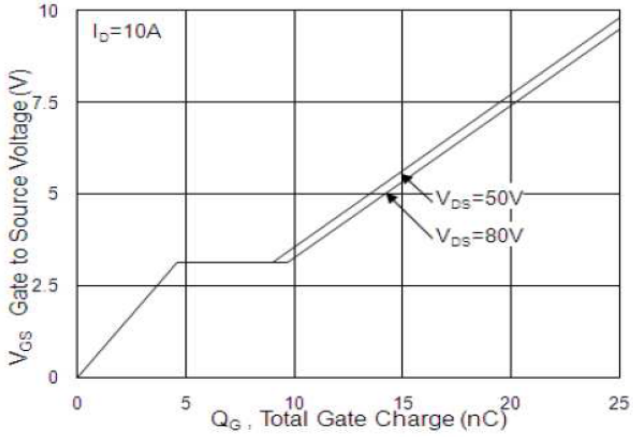


Fig 6. Gate Charge Characteristics

CHARACTERISTICS CURVE

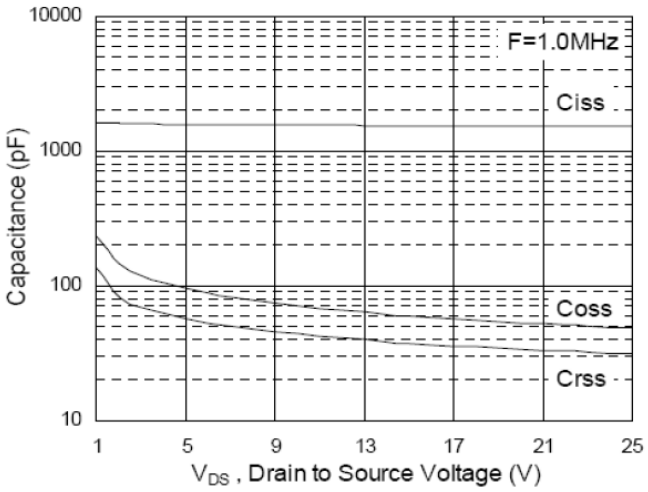


Fig 7. Typical Capacitance Characteristics

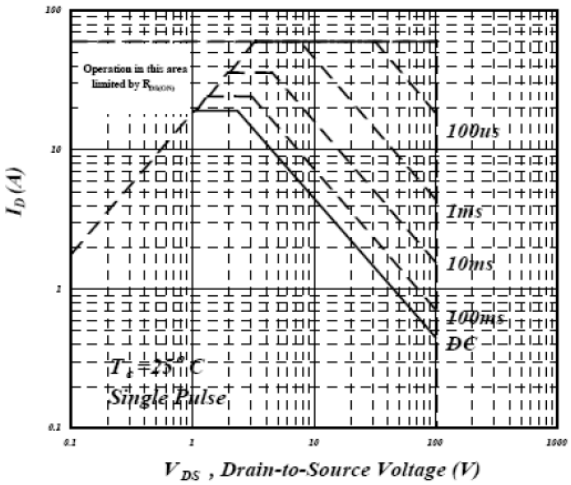


Fig 8. Maximum Safe Operating Area

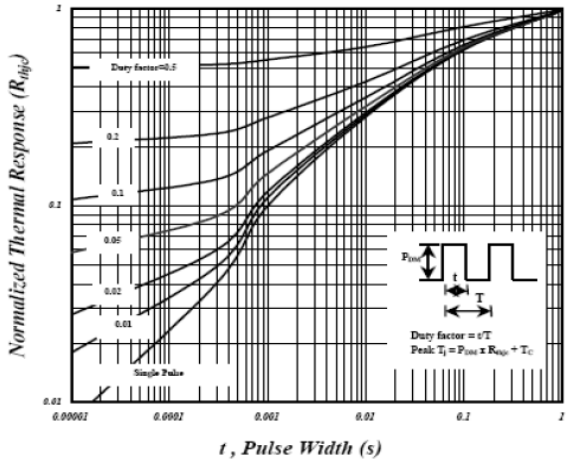


Fig 9. Normalized Transient Thermal Resistance vs. Pulse Width

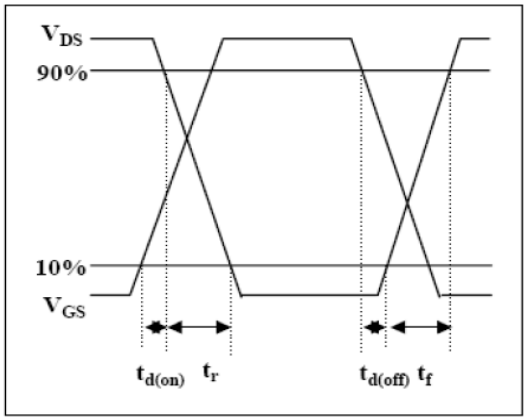


Fig 10. Switching Time Waveform

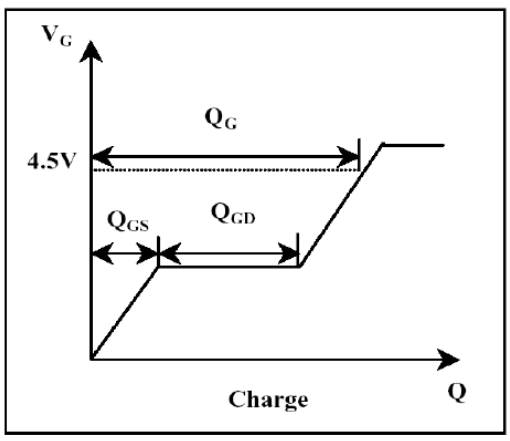


Fig 11. Gate Charge Waveform

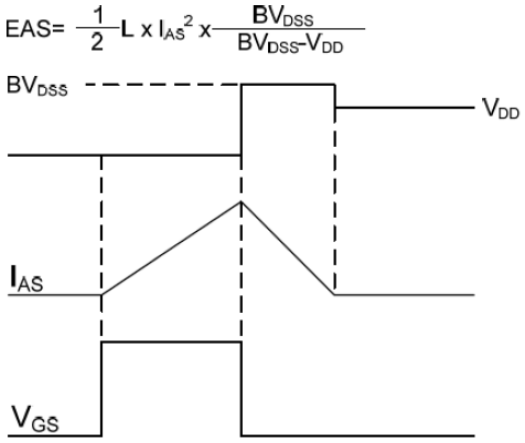


Fig 12. Unclamped Inductive Switching Waveform