Elektronische Bauelemente

SID10N30-600I

5.8A, 300V, $R_{DS(ON)}$ 600 mΩ
N-Channel Enhancement MOSFET

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

DESCRIPTION

The miniature surface mount MOSFETs utilize a high cell density trench process to provide Low $R_{DS(on)}$ and to ensure minimal power loss and heat dissipation.

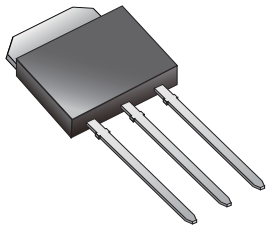
FEATURES

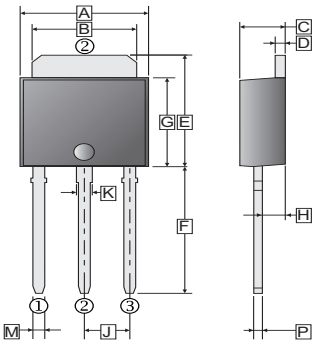
- Low $R_{DS(on)}$ provides higher efficiency and extends battery life.
- Low thermal impedance copper leadframe DPAK saves board space
- Fast switching speed.
- High performance trench technology.

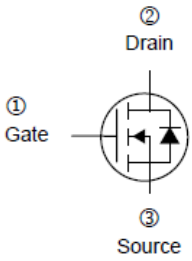
APPLICATION

DC-DC converters, power management in portable and battery-powered products such as computers, printers, PCMCIA cards, cellular and cordless telephones.

TO-251P







REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	6.40	6.80	G	6.00	6.30
B	5.20	5.50	H	0.90	1.50
C	2.20	2.40	J	2.30	
D	0.40	0.60	K	0.60	0.90
E	6.80	7.20	M	0.70	1.20
F	4.00		P	0.40	0.60

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	300	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [1]	T_C=25°C	I_D	5.8	A
Pulsed Drain Current [2]		I_{DM}	20	A
Continuous Source Current (Diode Conduction) [1]		I_S	10	A
Power Dissipation [1]	T_C=25°C	P_D	40	W
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55 ~ 175	°C
Thermal Resistance Data				
Maximum Junction to Ambient [1]		$R_{\theta JA}$	62.5	°C / W
Maximum Junction to Case		$R_{\theta JC}$	3.75	

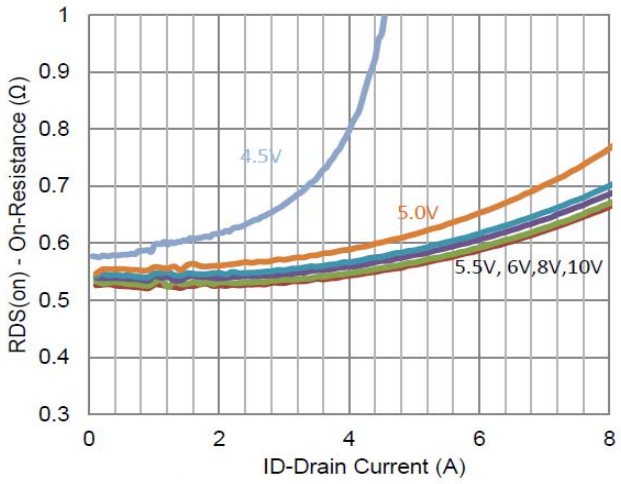
Notes:
1. Surface Mounted on 1" x 1" FR4 Board.
2. Pulse width limited by maximum junction temperature.

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

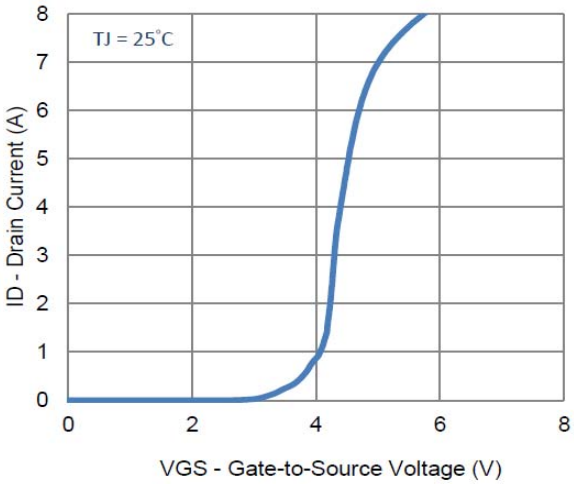
Parameter	Symbol	Min	Typ	Max	Unit	Test conditions
Static						
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	3.5	V	V_{DS}=V_{GS}, I_D=250μA
Gate-Body Leakage	I_{GSS}	-	-	±10	nA	V_{DS}=0, V_{GS}=±20V
Zero Gate Voltage Drain Current	I_{DSS}	-	-	1	μA	V_{DS}=240V, V_{GS}=0
		-	-	25		V_{DS}=240V, V_{GS}=0, T_J=55°C
On-State Drain Current [1]	$I_{D(ON)}$	10	-	-	A	V_{DS}=5V, V_{GS}=10V
Drain-Source On-Resistance [1]	$R_{DS(ON)}$	-	-	600	mΩ	V_{GS}=10V, I_D=2.9A
		-	-	900		V_{GS}=5.5V, I_D=2.6A
Forward Transconductance [1]	g_{FS}	-	10	-	S	V_{DS}=15V,,I_D=2.9A
Diode Forward Voltage	V_{SD}	-	0.8	-	V	I_S=5A, V_{GS}=0
Dynamic [2]						
Total Gate Charge	Q_g	-	13.5	-	nC	I_D=2.9A V_{DS}=120V V_{GS}=10V
Gate-Source Charge	Q_{gs}	-	4.1	-		
Gate-Drain Charge	Q_{gd}	-	3.4	-		
Turn-On Delay Time	$Td_{(ON)}$	-	12.1	-	nS	V_{DD}=120V V_{GEN}=10V R_L=41.4Ω I_D=2.9A R_{GEN}=6Ω
Rise Time	T_r	-	13.3	-		
Turn-Off Delay Time	$Td_{(OFF)}$	-	28.9	-		
Fall Time	T_f	-	16.8	-		
Input Capacitance	C_{iss}	-	1092	-	pF	V_{GS}=0 V_{DS}=15V f =1MHz
Output Capacitance	C_{oss}	-	90	-		
Reverse Transfer Capacitance	C_{rss}	-	52	-		

Notes:
1 Pulse test：PW ≦ 300 us duty cycle ≦ 2%.
2 Guaranteed by design, not subject to production testing.

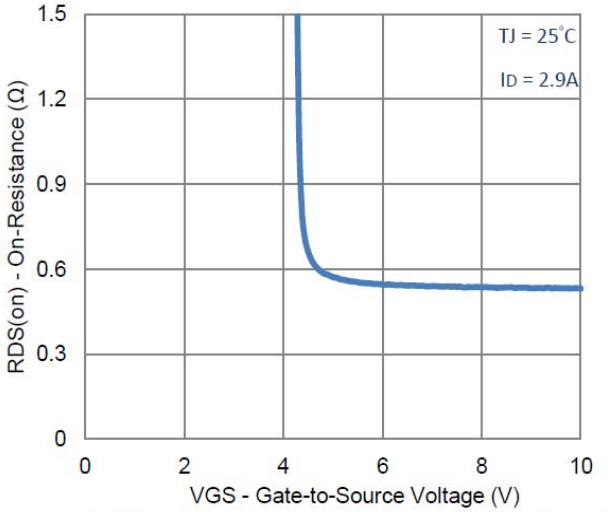
CHARACTERISTIC CURVE



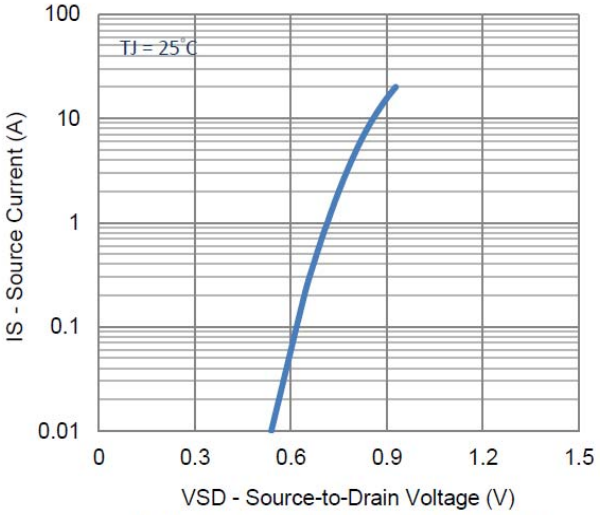
1. On-Resistance vs. Drain Current



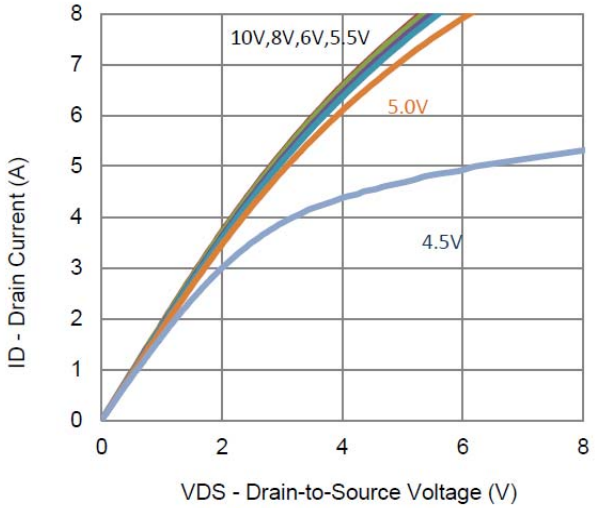
2. Transfer Characteristics



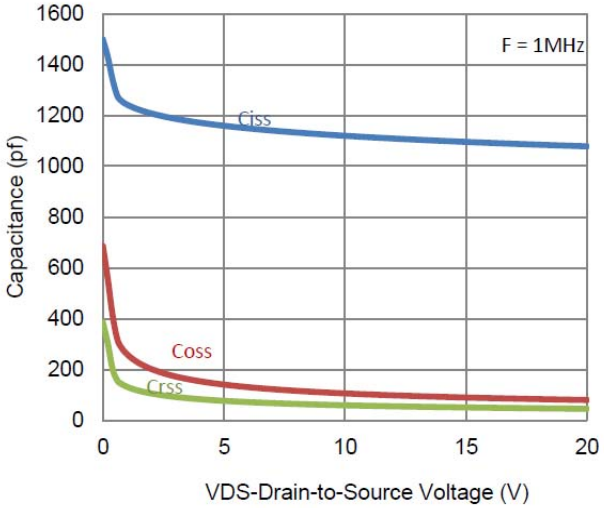
3. On-Resistance vs. Gate-to-Source Voltage



4. Drain-to-Source Forward Voltage

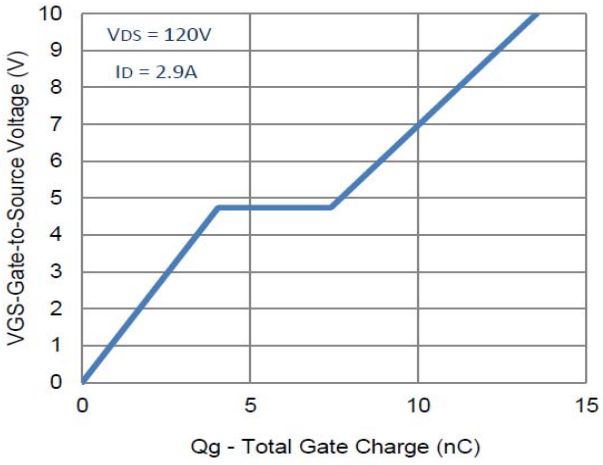


5. Output Characteristics

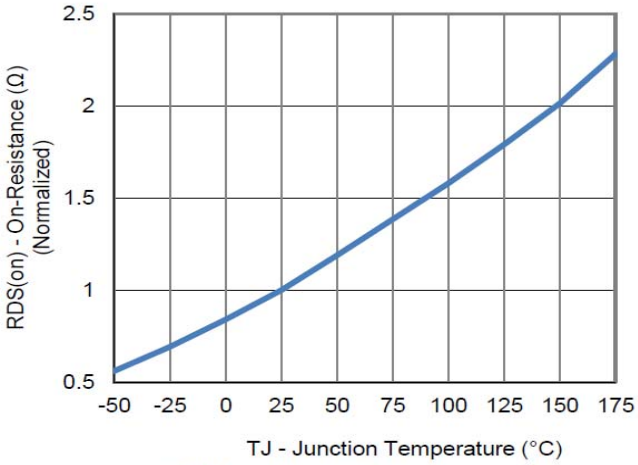


6. Capacitance

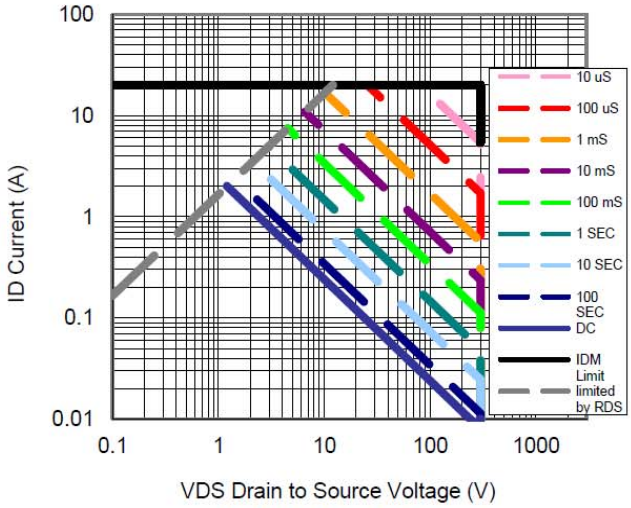
CHARACTERISTIC CURVE



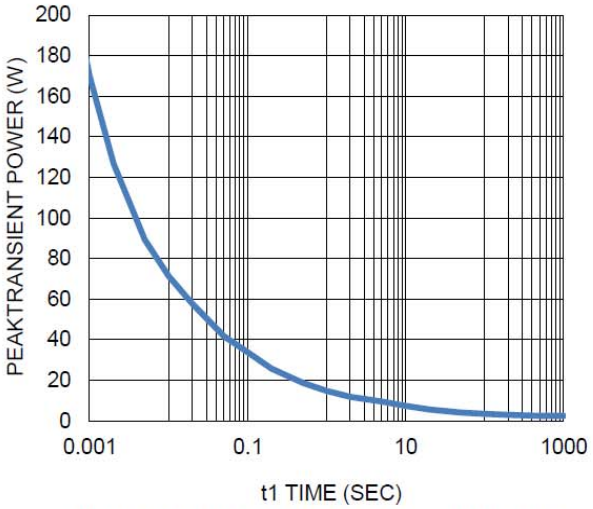
7. Gate Charge



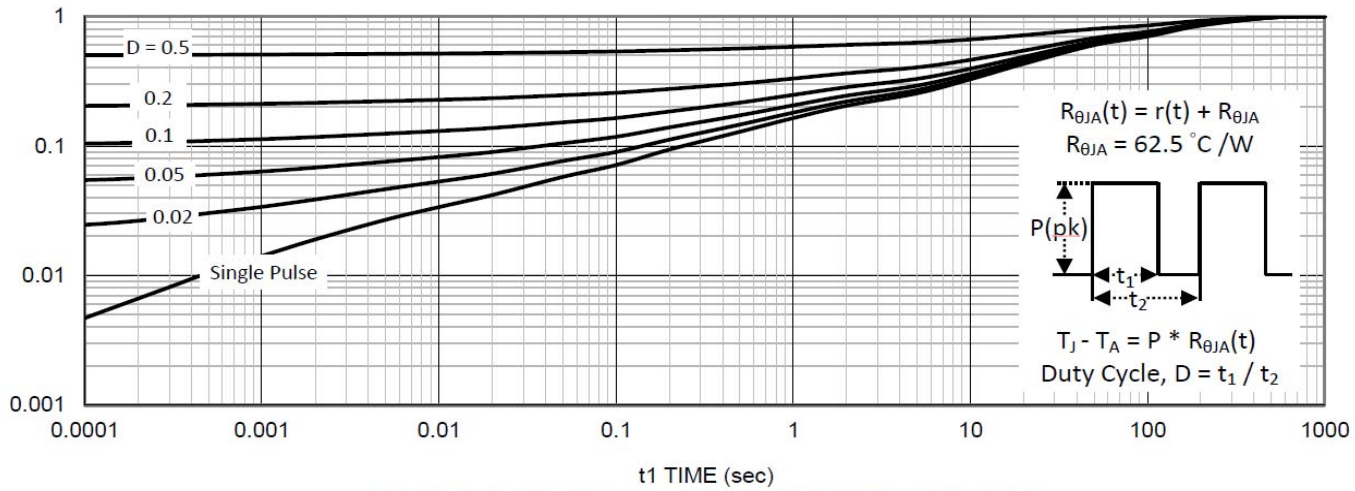
8. Normalized On-Resistance Vs Junction Temperature



9. Safe Operating Area



10. Single Pulse Maximum Power Dissipation



11. Normalized Thermal Transient Junction to Ambient