SID04N65SL

4A , 650V , $R_{DS(ON)}$ 2.7Ω

N-Ch Enhancement Mode Power MOSFET

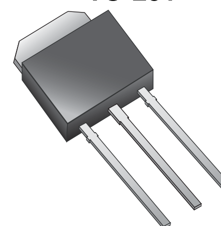
Elektronische Bauelemente

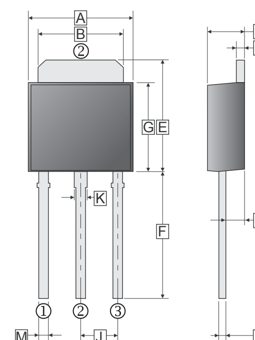
RoHS Compliant Product
A suffix of "-C" specifies halogen free

DESCRIPTION

The SID04N65SL is the highest performance trench N-ch MOSFETs with extreme high cell density , which provide excellent $R_{DS(on)}$ and gate charge for most of the synchronous buck converter applications .

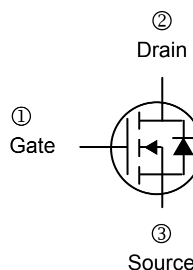
TO-251





FEATURES

- Advanced high cell density Trench technology
- Super Low Gate Charge
- Excellent CdV/dt effect decline
- 100% EAS Guaranteed
- Green Device Available



REF.	Millimeter Min.	Millimeter Max.	REF.	Millimeter Min.	Millimeter Max.
A	6.35	6.80	G	5.40	6.25
B	4.90	5.50	H	0.85	1.50
C	2.15	2.40	J	2.30	
D	0.45	0.90	K	0.60	1.05
E	6.50	7.50	M	0.50	0.90
F	7.20	9.65	P	0.45	0.62

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

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	650	V
Gate-Source Voltage		V_{GS}	±30	V
Continuous Drain Current	T_C=25°C	I_D	4	A
	T_C=100°C		2.8	A
Pulsed Drain Current		I_{DM}	16	A
Total Power Dissipation	T_C=25°C	P_D	79	W
	Derate above 25°C		0.63	
Single Pulse Avalanche Energy [1]		E_{AS}	202	mJ
Operating Junction and Storage Temperature Range		T_J, T_{STG}	-55~150	°C
Thermal Resistance Rating				
Maximum Thermal Resistance Junction-Ambient		$R_{θJA}$	110	°C / W
Maximum Thermal Resistance Junction-Case		$R_{θJC}$	1.58	°C / W

Notes:

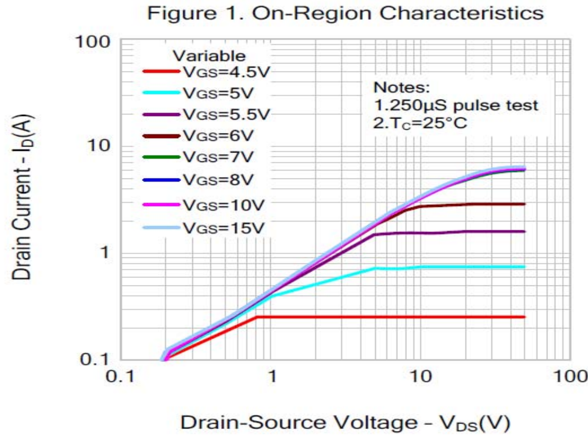
1. L=30mH,I_{AS}=3.36A, V_{DD}=150V, R_G=25Ω, Starting T_J =25°C

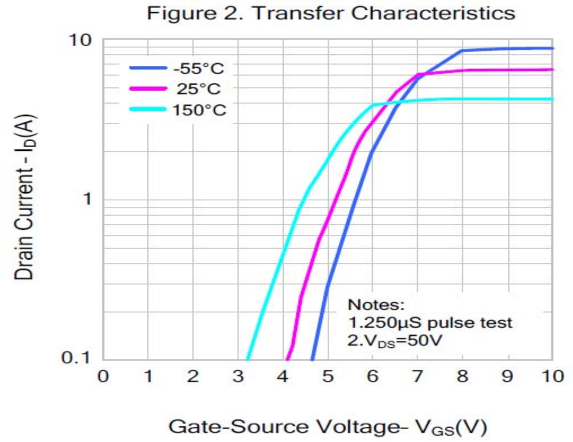
ELECTRICAL CHARACTERISTICS (T_J = 25°C unless otherwise specified)

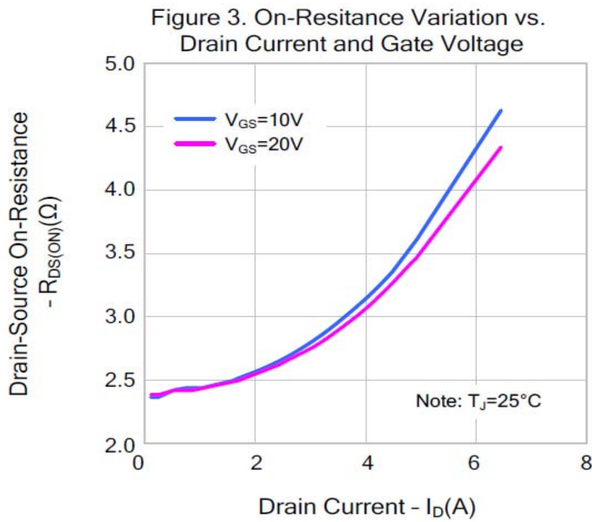
Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	650	-	-	V	V_{GS}=0, I_D= 250μA
Gate-Threshold Voltage	$V_{GS(th)}$	2	-	4	V	V_{DS}=V_{GS}, I_D=250μA
Gate-Source Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}= ±30V
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=650V, V_{GS}=0
Static Drain-Source On-Resistance	$R_{DS(ON)}$	-	2.3	2.7	Ω	V_{GS}=10V, I_D=2A
Total Gate Charge [1.2]	Q_g	-	8.03	-	nC	I_D=4A V_{DS}=520V V_{GS}=10V
Gate-Source Charge [1.2]	Q_{gs}	-	2.57	-		
Gate-Drain Change [1.2]	Q_{gd}	-	3.03	-		
Turn-on Delay Time [1.2]	$T_{d(on)}$	-	16.6	-	nS	V_{DD}=325V I_D=4A R_G=25 Ω
Rise Time [1.2]	T_r	-	37.33	-		
Turn-off Delay Time [1.2]	$T_{d(off)}$	-	18	-		
Fall Time [1.2]	T_f	-	19.2	-		
Input Capacitance	C_{iss}	-	464	-	pF	V_{GS} =0 V_{DS}=25V f =1.0MHz
Output Capacitance	C_{oss}	-	54	-		
Reverse Transfer Capacitance	C_{rss}	-	1.32	-		
Source-Drain Diode						
Diode Forward Voltage	V_{SD}	-	-	1.4	V	I_S=4A, V_{GS}=0
Continuous Source Current	I_S	-	-	4	A	Integral Reverse P-N Junction Diode in the MOSFET
Pulsed Source Current	I_{SM}	-	-	16	A	
Reverse Recovery Time	T_{rr}	-	455.23	-	ns	I_S=4A,V_{GS}=0, dI_F/dt=100A/μS
Reverse Recovery Charge	Q_{rr}	-	2.01	-	μC	

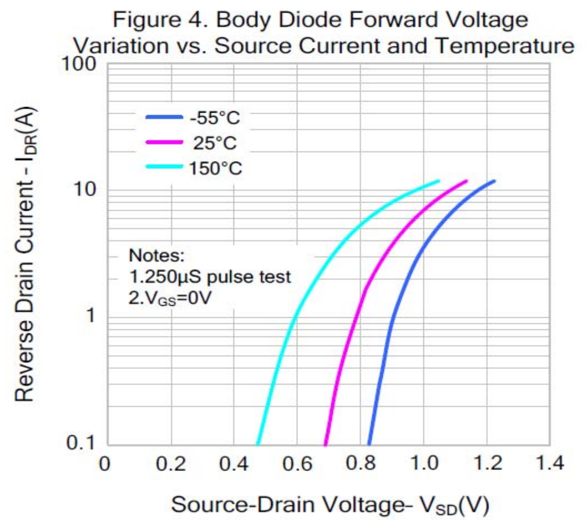
Notes:
1. Pulse Test: Pulse width ≦300μS, Duty cycle≦2%
2. Essentially independent of operating temperature.

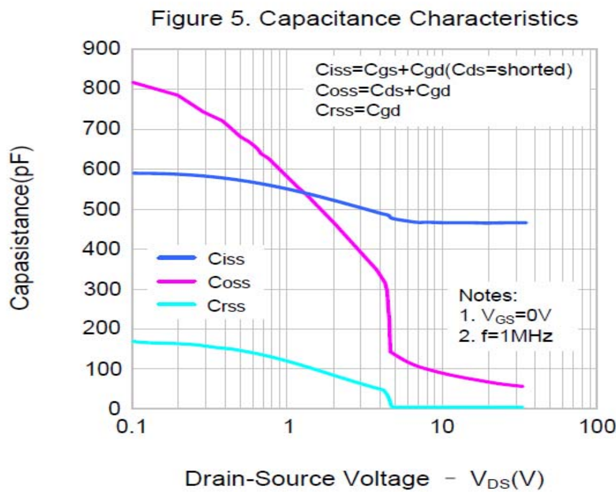
CHARACTERISTIC CURVES

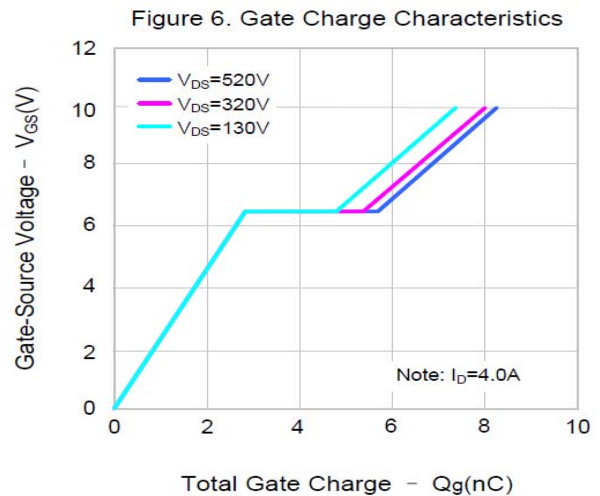












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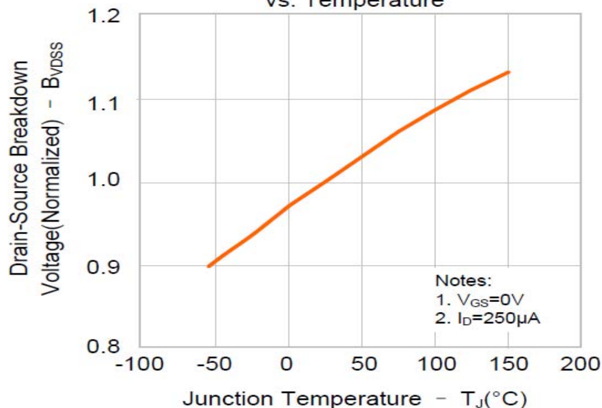
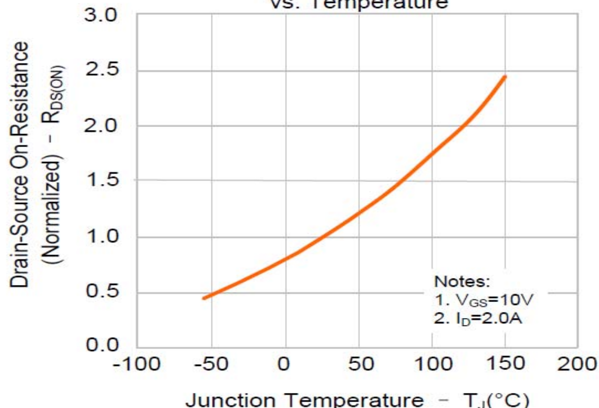
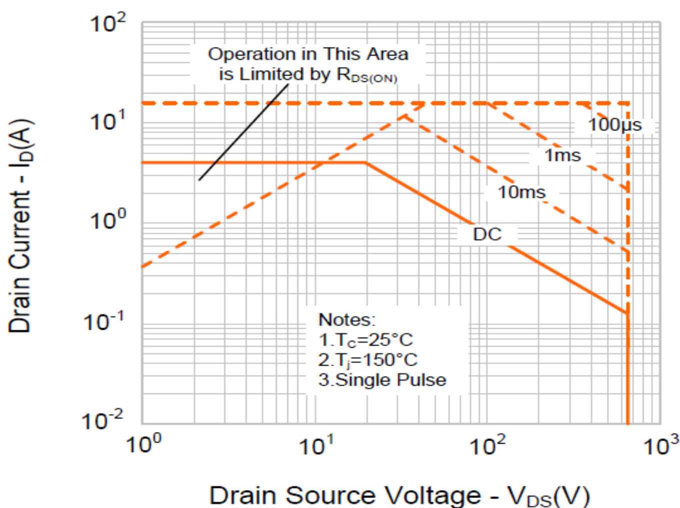
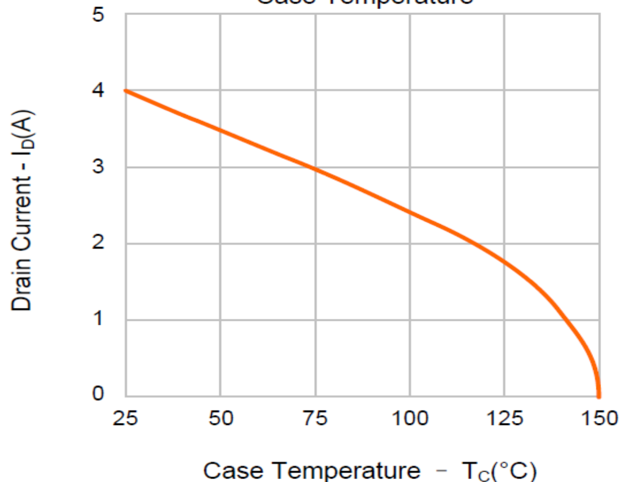
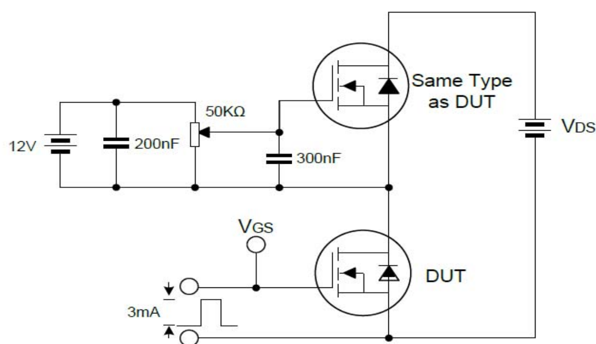


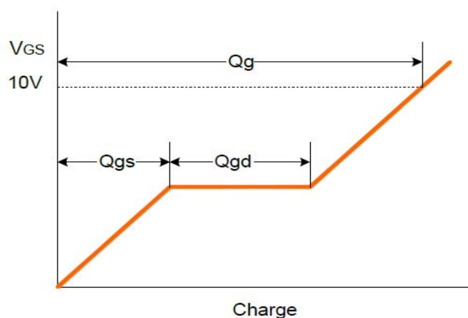






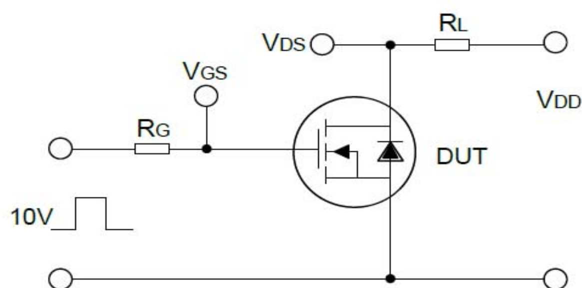
Gate Charge Test Circuit & Waveform

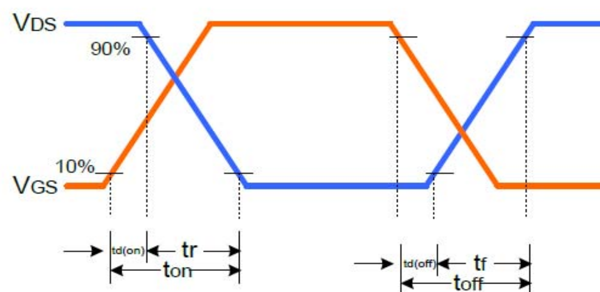




CHARACTERISTIC CURVES

Resistive Switching Test Circuit & Waveform





Unclamped Inductive Switching Test Circuit & Waveform