SemTron Microtech Corporation

SMC4866

30V N-Channel MOSFET

DESCRIPTION

The SMC4866 is the N-Channel enhancement mode power field effect transistors are using trench DMOS technology.

This advanced technology has been especially tailored to minimize on-state resistance, provide superior witching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications

SMC4866PDC-TRG ROHS Compliant This is Halogen Free

FEATURE

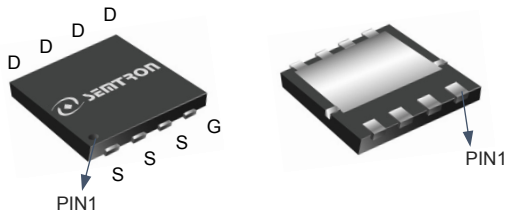
- ***30V / 45A***
- ***$R_{DS(ON)}$ = 7.5mΩ(typ.)@V_{GS} = 10V***
- ***$R_{DS(ON)}$ = 9.5mΩ(typ.)@V_{GS} = 4.5V***

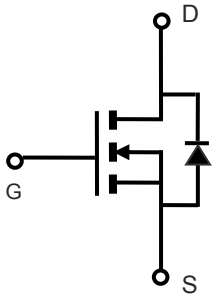
- Fast switch
- Low gate charge
- Improved dv/dt capability
- High power and current handlingcapability
- 100% EAS Guaranteed

APPLICATIONS

- High Frequency DC/DC convertersPortabl
- POL Applications

PIN CONFIGURATION





DFN3.3X3.3A-8
Top View

PART NUMBER INFORMATION

SMC 4866 PDC - TR G a b c d e	a : Company name. b : Product Serial number. c : Package code d : Handling code e : Green produce code

ORDERING INFORMATION

Part Number	Package Code	Handling Code	Shipping
SMC4866PDC-TRG	PDC : DFN3.3X3.3A-8	TR : Tape&Reel	3K/Reel

※ DFN3.3X3.3A-8 : Only available in tape and reel packaging.

ABSOLUTE MAXIMUM RATINGS (T_C = 25°C Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		30	V
V_{GSS}	Gate-Source Voltage		±20	V
I_D	Continuous Drain Current [A]	T_C=25°C	45	A
		T_C=100°C	28	
I_{DM}	Pulsed Drain Current [A]		90	A
EAS	Single Pulse Avalanche energy L=0.1mH [B]		47	mJ
I_{AS}	Avalanche Current [B]		32	A
P_D	Power Dissipation [F]	T_C=25°C	29	W
	Power Dissipation [A] Surface−mounted	T_C=25°C	3.0	W
		T_C=100°C	1.5	
T_J	Operation Junction Temperature		-55/150	°C
T_{STG}	Storage Temperature Range		-55/150	°C

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.
Absolute maximum ratings are stress ratings only and functional device operation is not implied.

THERMAL DATA

Symbol	Parameter		Typ	Max	Unit
$R_{\theta JA}$	Thermal Resistance-Junction to Ambient[A]	Steady-State	-	60	°C/W
$R_{\theta JL}$	Thermal Resistance Junction to Lead[A]	Steady-State	-	3.5	°C/W

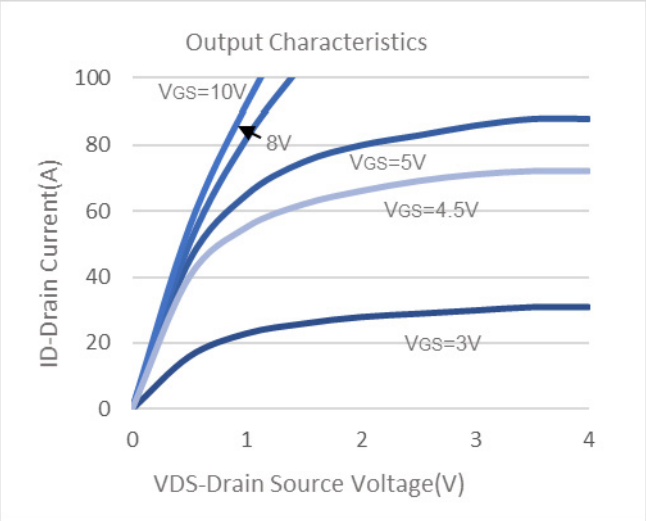
ELECTRICAL CHARACTERISTICS (T_J = 25°C Unless otherwise noted)

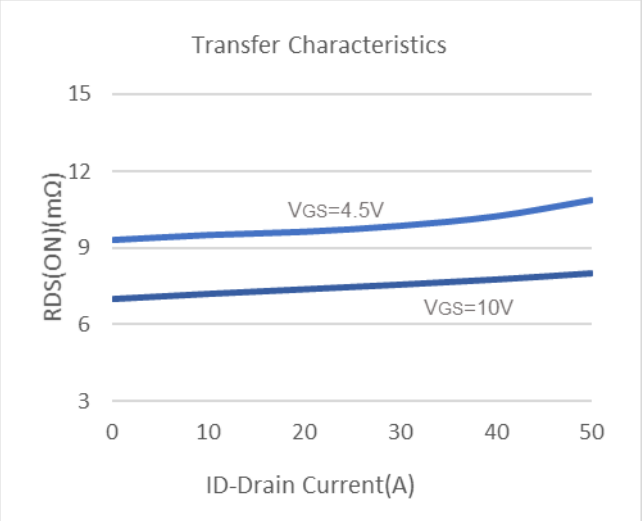
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage [D]	V_{GS} =0V,I_D =250μA	30			V
$V_{GS(th)}$	Gate Threshold Voltage [D]	V_{DS} =V_{GS},I_D =250μA	1.0	1.6	2.5	V
I_{GSS}	Gate Leakage Current	V_{DS} =0V,V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS} =30V,V_{GS} =0V T_J =25°C			1	μA
		V_{DS} =24V,V_{GS} =0V, T_J =125°C			10	
$R_{DS(ON)}$	Drain-source On-Resistance [D]	V_{GS} =10V,I_D=24A		7.5	9	mΩ
		V_{GS} =4.5V, I_D=16A		9.5	13	
G_{fs}	Forward Transconductance [D]	V_{DS} =10V,I_D =8A		9.7		S
Source-Drain Doide						
V_{SD}	Diode Forward Voltage[B]	I_S=1A,V_{GS}=0V		0.7	1.0	V
I_S	Continuous Source Current				20	A
Dynamic Parameters						
Q_g	Total Gate Charge	V_{DS} =15V,V_{GS} =4.5V I_D =20A		7.8		nC
Q_{gs}	Gate-Source Charge			.1.4		
Q_{gd}	Gate-Drain Charge			4.4		
C_{iss}	Input Capacitance	V_{DS} =25V,V_{GS} =0V f =1MHz		720		pF
C_{oss}	Output Capacitance			158		
C_{rss}	Reverse Transfer Capacitance			72		
R_G	Gate Resistance	V_{GS}=0V, V_{DS}=0V, F=1MHz		2.5		Ω
$t_{d(on)}$	Turn-On Time [E]	V_{DD}=15V, V_{GEN}=10V, R_G=3.3Ω,		4.8		nS
t_r				12		
$t_{d(off)}$	Turn-Off Time [E]			27		
t_f				8.1		

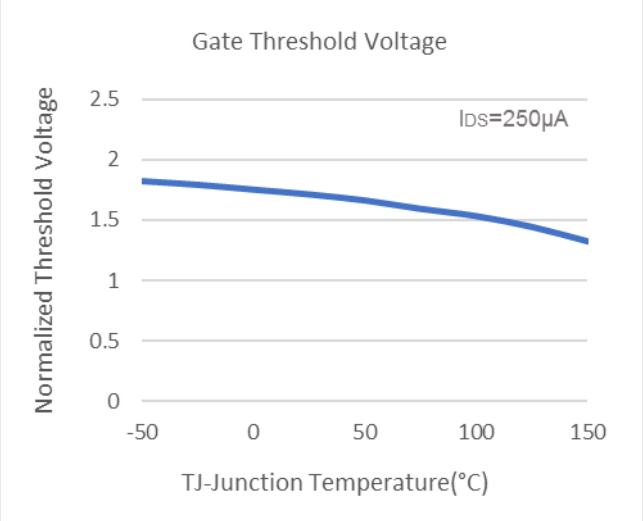
Note:

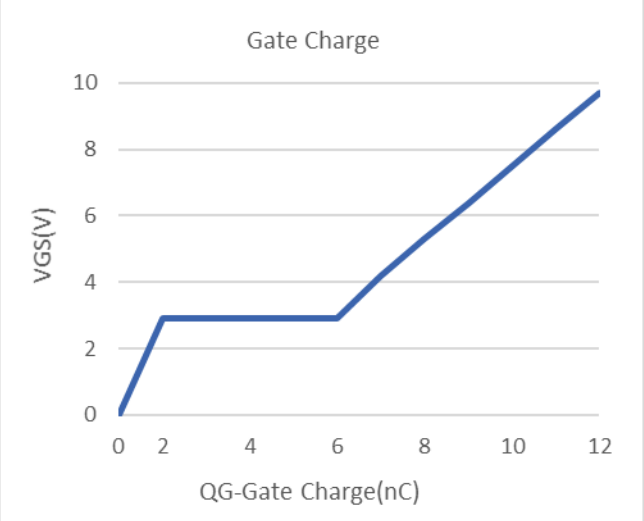
A. Surface−mounted on FR-4 board using 1 sq−in pad, 1 oz Cu.
B. The E_{AS} data shows Max. rating . The test condition is V_{DD}=25V,V_{GS}=10V,L=0.1mH,I_{AS}=30A,R_G=25Ω,Starting T_J=25°C.
C. UIS tested and pulse width limited by maximum junction temperature 150°C (initial temperature T_J=25°C).
D. The data tested by pulsed , pulse width ≦ 300uS , duty cycle ≦ 2%
E. Pulsed width limited by maximum junction temperature.
F. The power dissipation P_D is based on T_J(MAX)=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper.

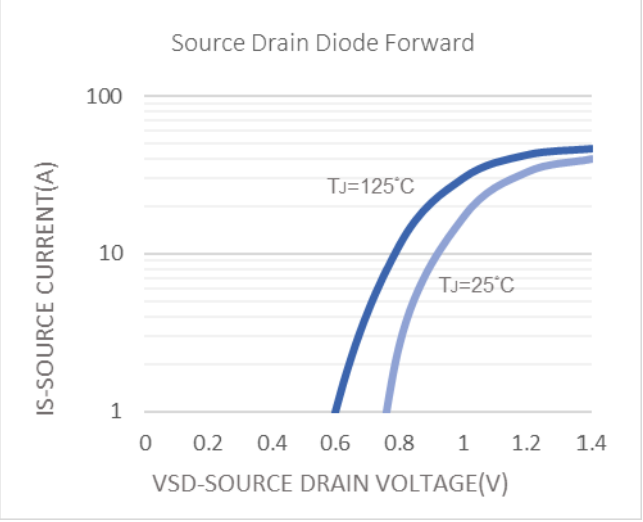
TYPICAL CHARACTERISTICS

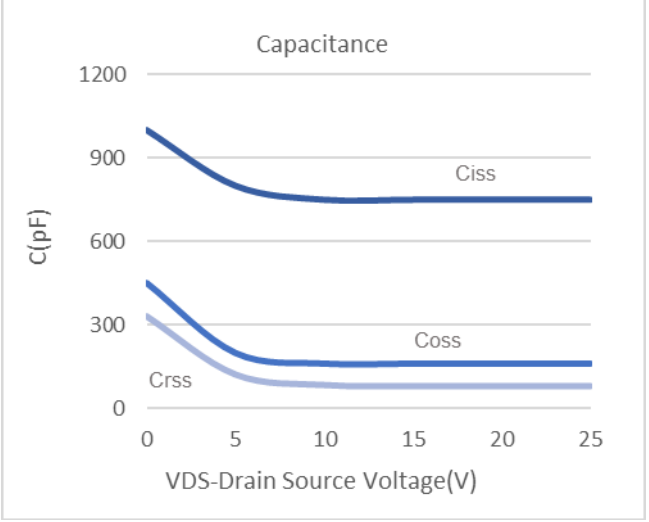




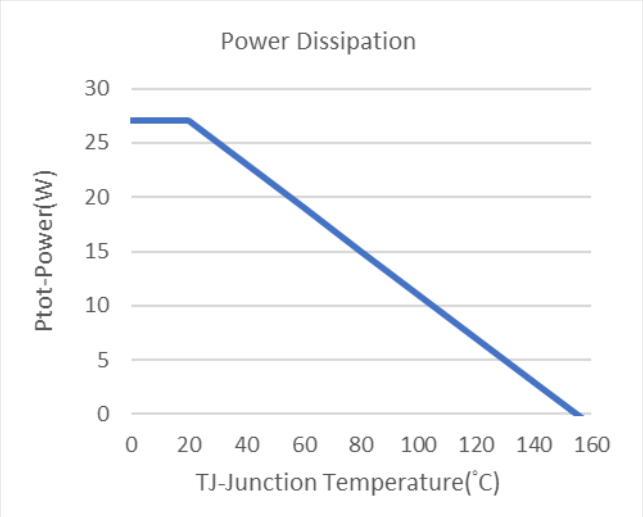


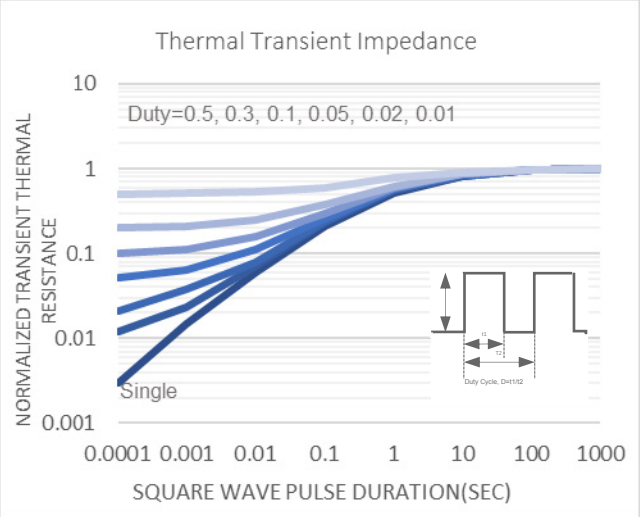


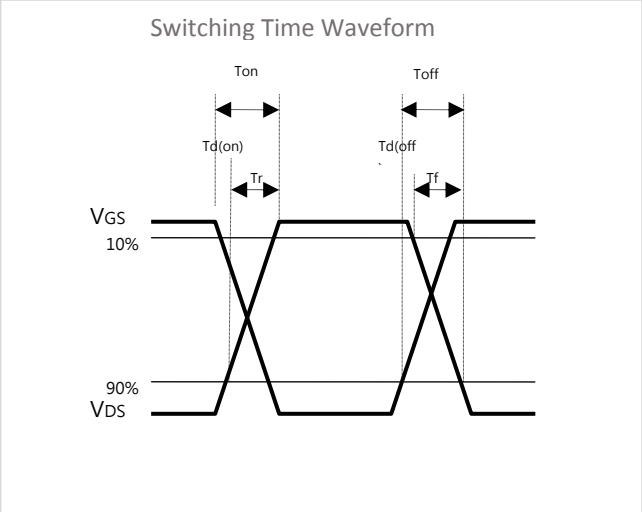


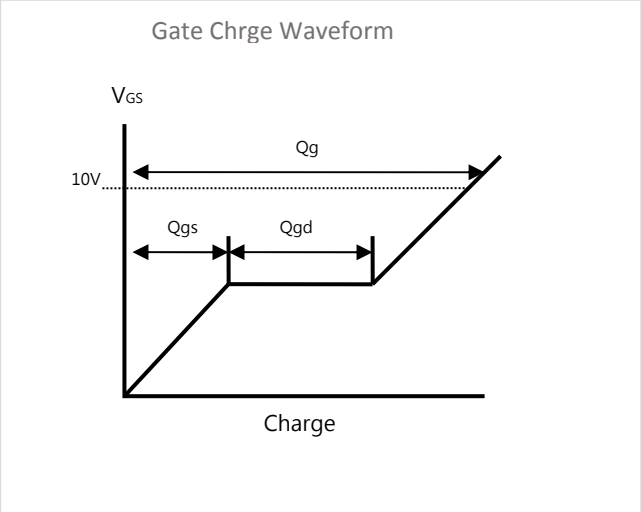


TYPICAL CHARACTERISTICS









DFN3.3X3.3A-8 PACKAGE DIMENSIONS

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.65	0.85	0.026	0.033
A1	0.152REF.		0.006REF.	
A2	0~0.05		0~0.02	
D	2.9	3.1	0.114	0.122
D1	2.54	2.74	0.1	0.011
E	2.9	3.1	0.114	0.122
E1	3.15	3.45	0.124	0.136
E2	1.365	1.765	0.054	0.069
b	0.2	0.4	0.008	0.016
e	0.55	0.75	0.022	0.03
L	0.26	0.46	0.01	0.018
L1	0.017	0.465	0.006	0.018
L2	0~0.1		0~0.004	
L3	0~0.1		0~0.004	
H	0.3	0.5	0.012	0.02
Θ	9°	13°	9°	13°