SemTron Microtech Corporation

SMC2337

-20V P-Channel Enhancement Mode MOSFET

DESCRIPTION

The SMC2337 is the P-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 switching performance, and withstand high energy pulse in the avalanche and commutation mode. These devices are well suited for high efficiency fast switching applications.

SMC2337S-TRG ROHS Compliant This is Halogen Free

FEATURE

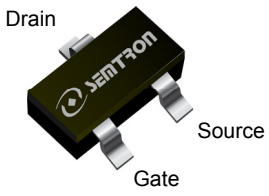
- ***-20V/-5.0A, $R_{DS(ON)}$ =20mΩ(typ)@V_{GS} =-4.5V***
- ***-20V/-4.0A, $R_{DS(ON)}$ =25mΩ(typ)@V_{GS} =-2.5V***
- ***-20V/-3.0A, $R_{DS(ON)}$ =31mΩ(typ)@V_{GS} =-1.8V***

- Improved dv/dt capability
- Suit for -1.8V Gate Drive Applications
- Super high density cell design for extremely low $R_{DS(ON)}$
- Fast switching

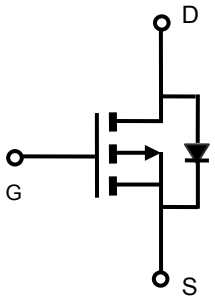
FEATURE

- Hand-held Instruments
- High Frequency Point-of-Load Synchronous Small power switching for MB/NB/UMPC/VGA
- Networking
- Load Switch

PIN CONFIGURATION



SOT-23L
Top View



PART NUMBER INFORMATION

SMC 2337 S - 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
SMC2337S-TRG	S : SOT-23L	TR : Tape&Reel	3K/Reel

※ Year Code : 0 ~ 9, 2015 : 5
※ Week Code : A(1~2) ~ Z(53~54)
※ SOT-23L : Only available in tape and reel packaging.

ABSOLUTE MAXIMUM RATINGS (T_A = 25℃ Unless otherwise noted)

Symbol	Parameter		Typical	Unit
V_{DSS}	Drain-Source Voltage		-20	V
V_{GSS}	Gate-Source Voltage		±10	V
I_D	Continuous Drain Current (T_C=25°C) [A]	V_{GS}=-4.5V	-6	A
	Continuous Drain Current (T_C=70°C) [A]		-5.2	A
I_{DM}	Pulsed Drain Current [B]		-25	A
P_D	Power Dissipation	T_A=25°C T_A=70°C	1.5 0.95	W
T_J	Operation Junction Temperature		-55 to150	°C
T_{STG}	Storage Temperature Range		-55 to150	°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	-	80	°C/W
$R_{\theta JL}$	Thermal Resistance Junction to Lead [A]	Steady-State	-	65	°C/W

■ELECTRICAL CHARACTERISTICS(T_J = 25℃ Unless otherwise noted)

Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
$V_{(BR)DSS}$	Drain-Source Breakdown Voltage	V_{GS}=0V,I_D=-250μA	-20			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS},I_D=-250μA	-0.4	-0.6	-1.0	V
I_{GSS}	Gate Leakage Current	V_{DS}=0V,V_{GS}=±10V			±100	nA
I_{DSS}	Zero Gate Voltage, Drain-Source Leakage Current	V_{DS}=-20V,V_{GS}=0V T_J=25°C			-1	μA
		V_{DS}=-16V,V_{GS}=0V T_J=125°C			-10	
$R_{DS(ON)}$	Drain-source On-Resistance[B]	V_{GS}=-4.5V,I_D=-5.0A V_{GS}=-2.5V,I_D=-4.0A V_{GS}=-1.8V,I_D=-3.0A		21 25 32	24 30 37	mΩ
Source-Drain Doide						
V_{SD}	Diode Forward Voltage	I_S=-1.0A,V_{GS}=0V		-0.7	-1.0	V
I_S	Continuous Source Current[AC]				-6.5	A
Dynamic Parameters						
Q_g	Total Gate Charge	V_{DS}=-10V V_{GS}=-4.5V I_D≡-4.0A		19.6		nC
Q_{gs}	Gate-Source Charge			1.9		
Q_{gd}	Gate-Drain Charge			3.8		
C_{iss}	Input Capacitance	V_{DS}=-15V V_{GS}=0V f=1MHz		1680		pF
C_{oss}	Output Capacitance			222		
C_{rss}	Reverse Transfer Capacitance			118		
$t_{d(on)}$	Turn-On Time	V_{DD}=-10V I_D=-1A V_{GEN}=-4.5V R_G=25Ω		10.3		nS
t_r				37.3		
$t_{d(off)}$	Turn-Off Time			89		
t_f				24.5		

Note:

A. The value of R $_{\theta JA}$ is measured with the device mounted on 1in 2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

B. The data tested by pulsed , pulse width ≦ 300uS , duty cycle ≦ 2%

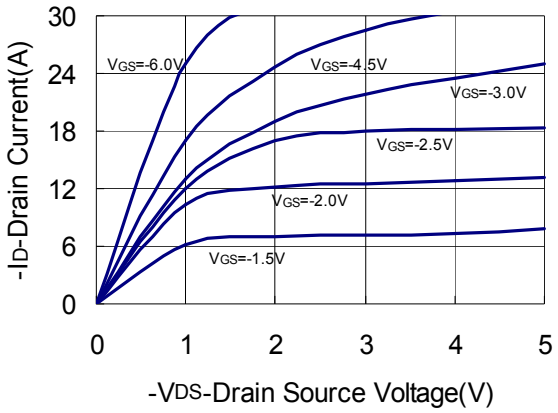
C. The data is theoretically the same as I_D and I_{DM} , in real applications , should be limited by total power dissipation.

The products and product specifications contained herein are subject to change without notice to improve performance characteristics. Consult us, or our representatives before use, to confirm that the information in this datasheet is up to date

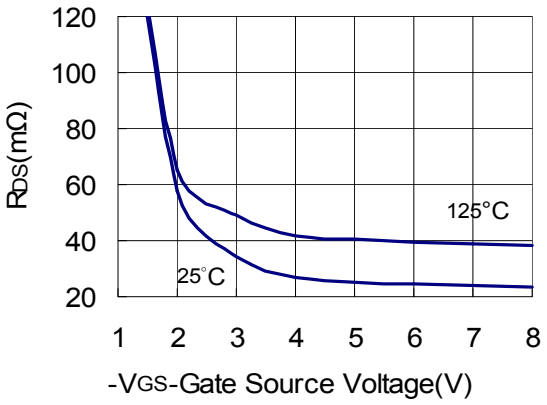
We assume no responsibility for any infringement of patents, patent rights, or other rights arising from the use of any information and circuitry in this datasheet.

TYPICAL CHARACTERISTICS (25℃ Unless Note)

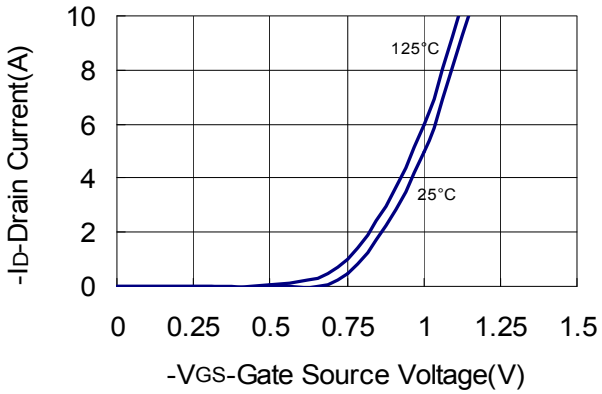
Output Characteristics



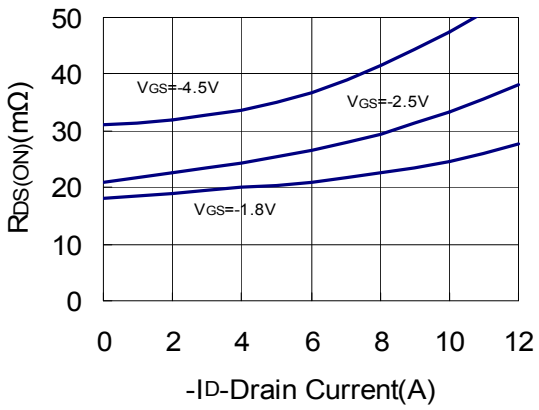
Drain-Source On Resistance



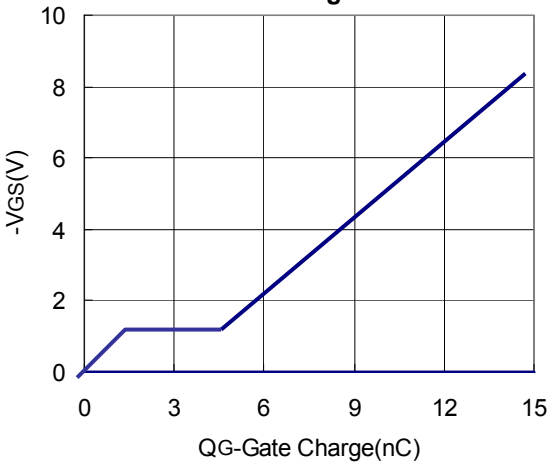
Transfer Characteristics



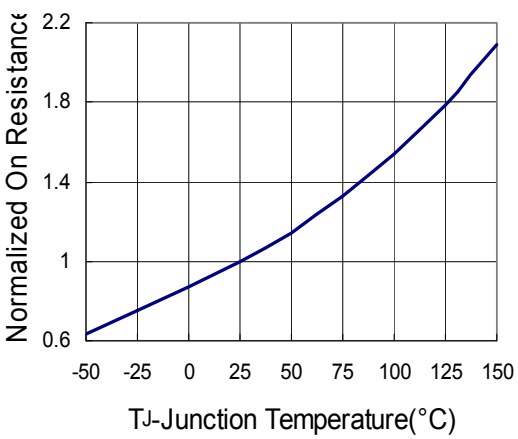
Drain Source On Resistance



Gate Charge

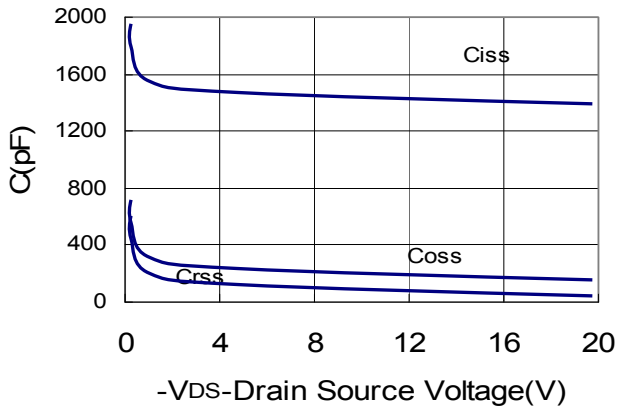


Drain Source On Resistance

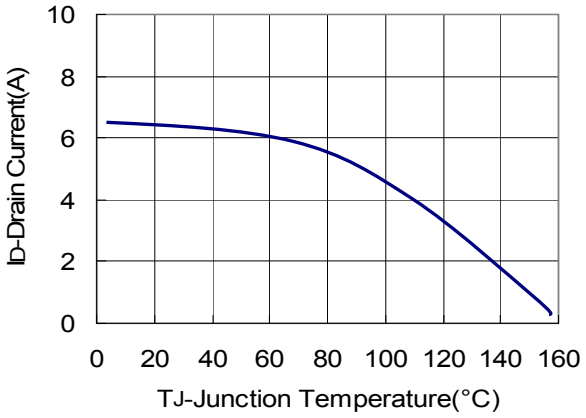


TYPICAL CHARACTERISTICS (25℃ Unless Note)

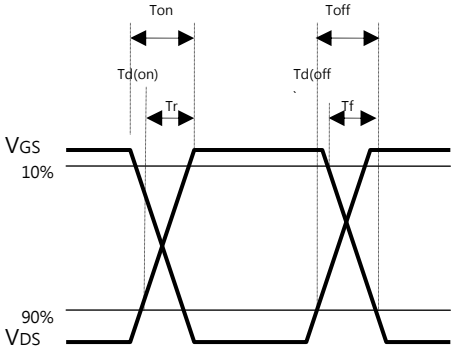
Capacitance



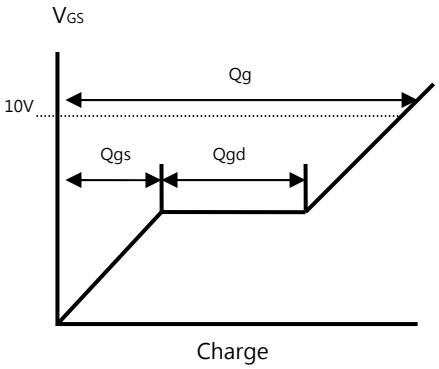
Drain Current



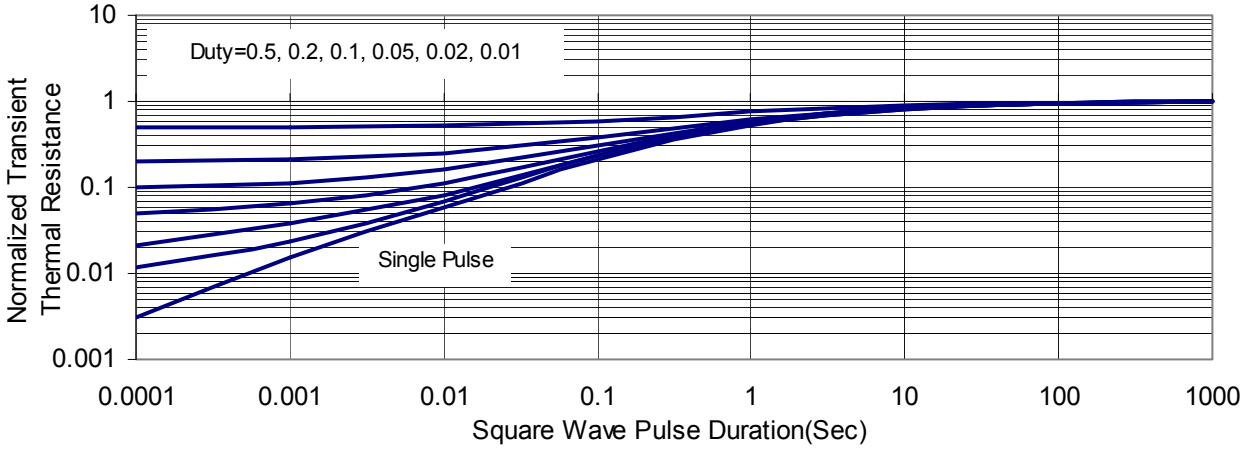
Switching Time Waveform



Gate Chrge Waveform



Thermal Transient Impedance



SOT-23L PACKAGE DIMENSIONS

Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.500	0.012	0.020
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950 BSC		0.037 BSC	
e1	1.800	2.000	0.071	0.079
L	0.300	0.600	0.012	0.024
θ	0°	8°	0°	8°

SOT-23L PACKAGE OUTLINE DIMENSIONS