

Single P-Channel MOSFET

DESCRIPTION

SMC3535A is the P-Channel logic enhancement mode power field effect transistor is produced using high cell density, advanced trench technology to provide excellent $R_{DS(ON)}$, low gate charge and operation gate as 2.5V.

This device is suitable for use as a load switch or other general applications.

PART NUMBER INFORMATION

SMC 3535A K - TR G
 a b c d e

a : Company name.
 b : Product Serial number.
 c : Package code K:SOT-89
 d : Handling code TR:Tape&Reel
 e : Green produce code G:RoHS Compliant

FEATURES

$V_{DS} = -30V$, $I_D = -5.9A$

$R_{DS(ON)}=45m\Omega(Typ.) @V_{GS}=-10V$

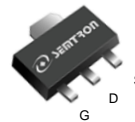
$R_{DS(ON)}=52m\Omega(Typ.) @V_{GS}=-4.5V$

$R_{DS(ON)}=68m\Omega(Typ.) @V_{GS}=-2.5V$

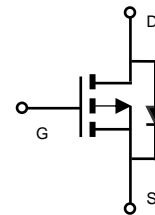
- ◆ Fast switch
- ◆ Low gate charge
- ◆ High power and current handling capability

APPLICATIONS

- ◆ Portable Equipment
- ◆ Power Management
- ◆ Load Switch



SOT-89



ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ C$ Unless otherwise noted)

Symbol	Parameter	Rating	Units	
V_{DSS}	Drain-Source Voltage	-30	V	
V_{GSS}	Gate-Source Voltage	± 12	V	
I_D	Continuous Drain Current	$T_A=25^\circ C$	-5.9	A
		$T_A=70^\circ C$	-4.7	A
I_{DM}	Pulsed Drain Current ^A	-23.7	A	
P_D	Power Dissipation ^B	$T_A=25^\circ C$	3.1	W
		$T_A=70^\circ C$	2	W
T_J	Operation Junction Temperature	-55/150	$^\circ C$	
T_{STG}	Storage Temperature Range	-55/150	$^\circ C$	

THERMAL RESISTANCE

Symbol	Parameter	Typ	Max	Units
$R_{\theta JA}$	Thermal Resistance Junction to Ambient ^B	$t \leq 10s$	40	$^\circ C/W$
	Thermal Resistance Junction to Ambient ^{BC}	Steady-State	90	

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$ Unless otherwise noted)

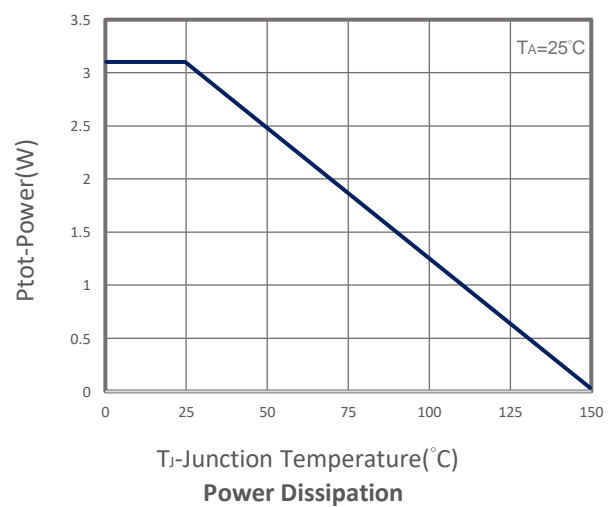
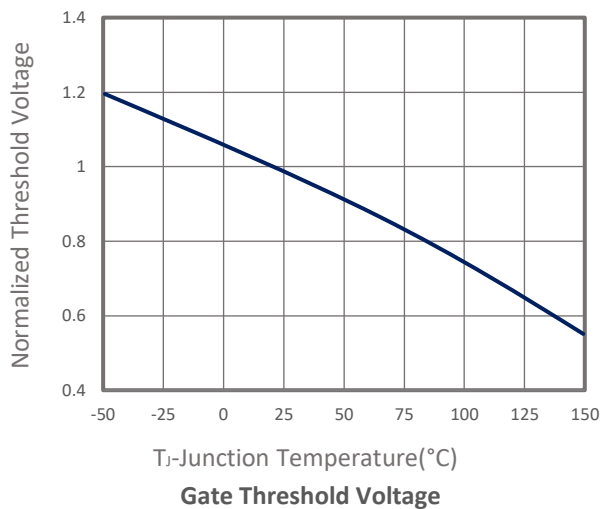
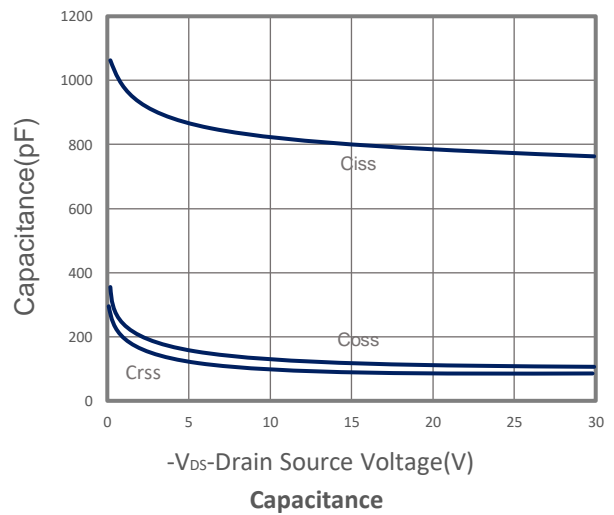
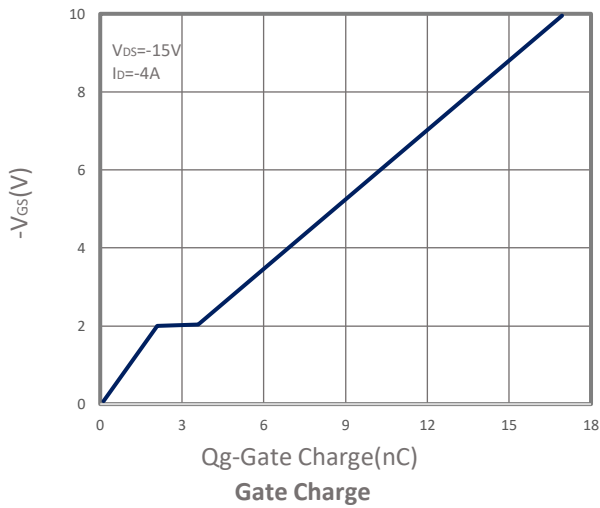
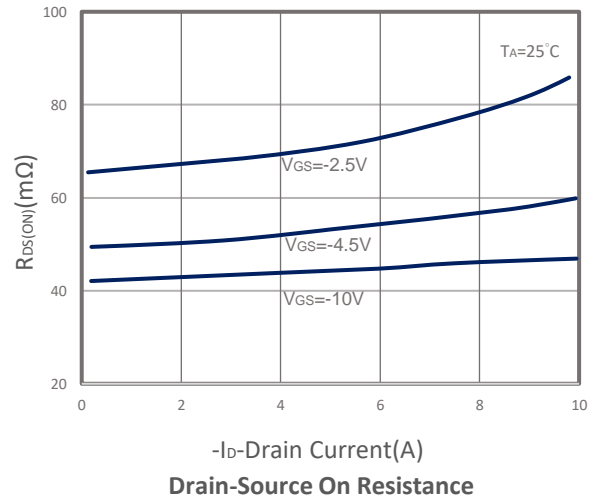
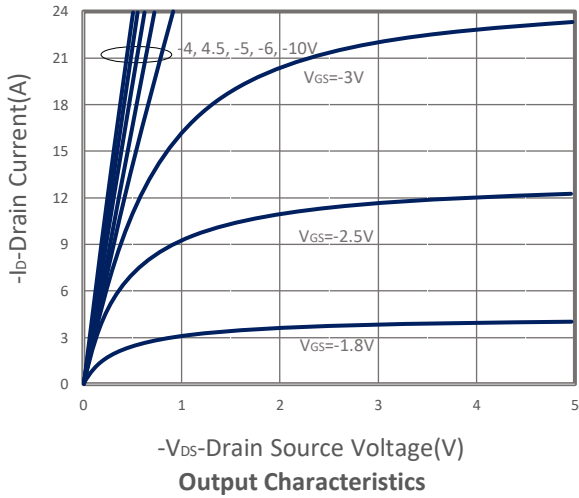
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250 μ A	-30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250 μ A	-0.5	-0.7	-1	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} = \pm 12V			\pm 100	nA
I _{DSS}	Zero Gate Voltage Drain Current	V _{DS} =-30V, V _{GS} =0V, T _J =25 $^\circ$ C			-1	μ A
		V _{DS} =-24V, V _{GS} =0V, T _J =75 $^\circ$ C			-10	
R _{DS(ON)}	Drain-source On-Resistance	V _{GS} =-10V, I _D =-5.9A		45	54	m Ω
		V _{GS} =-4.5V, I _D =-4A		52	62	
		V _{GS} =-2.5V, I _D =-3A		68	85	
G _{fs}	Forward Transconductance	V _{DS} =-10V, I _D =-4A		5.7		S
Diode Characteristics						
V _{SD}	Diode Forward Voltage	I _S =-1A, V _{GS} =0V		-0.7	-1	V
I _S	Continuous Source Current				-5.9	A
Dynamic and Switching Parameters						
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-10V, I _D =-4A		16.8	23.5	nC
Q _g	Total Gate Charge (4.5V)			8.2	11.5	
Q _{gs}	Gate-Source Charge			2	2.8	
Q _{gd}	Gate-Drain Charge			1.5	2.1	
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz		805		pF
C _{oss}	Output Capacitance			87		
C _{rss}	Reverse Transfer Capacitance			48		
t _{d(on)}	Turn-On Time	V _{DD} =-15V, V _{GEN} =-10V, R _G =6 Ω , I _D =-1A		5.6	11	nS
t _r				8.2	16	
t _{d(off)}	Turn-Off Time			36.5	69	
t _f				9.6	18	

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged.

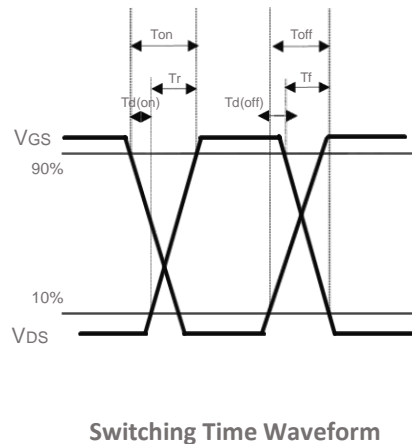
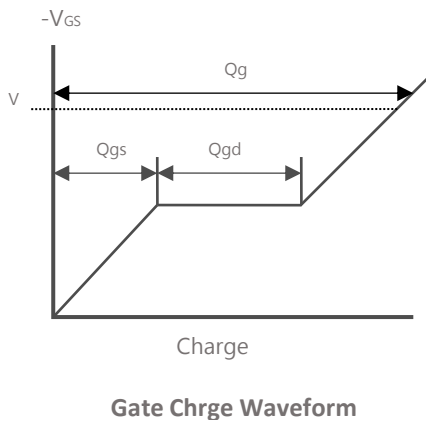
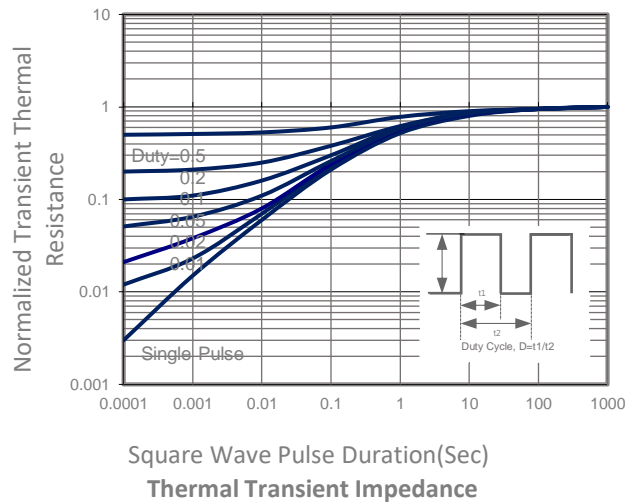
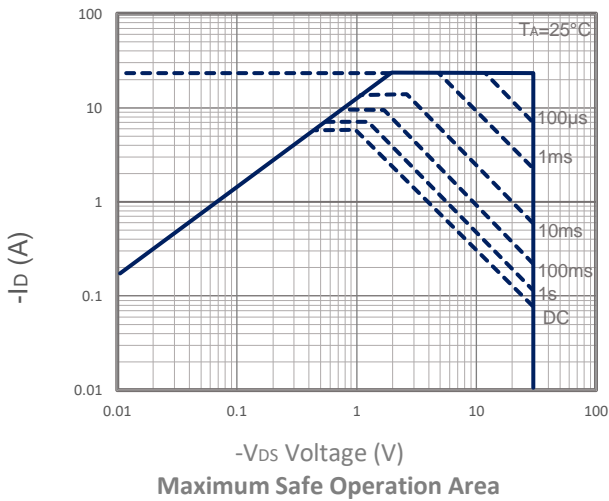
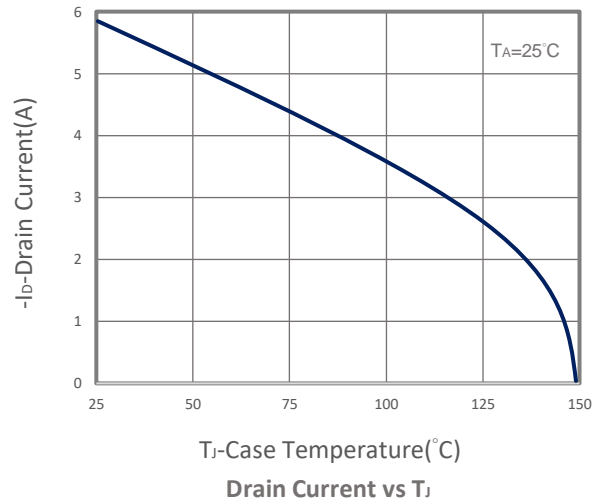
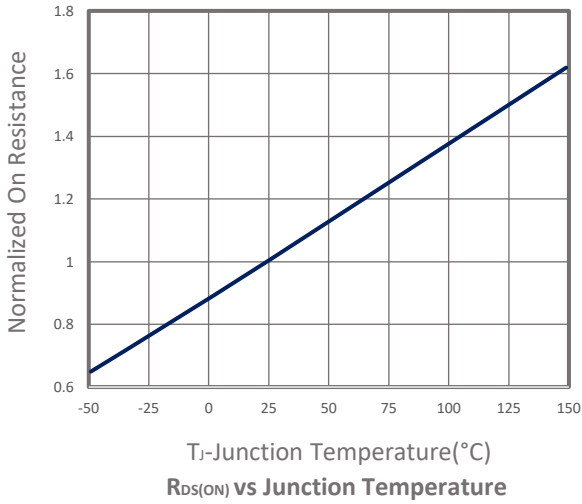
- Pulsed width limited by maximum junction temperature, T_{J(MAX)}=150 $^\circ$ C.
- Measure the value in a still air environment at T_A=25 $^\circ$ C, using an installation mounted on a 1 in2 FR-4 board, maximum junction temperature T_{J(MAX)}=150 $^\circ$ C.
- T_{J(MAX)}=150 $^\circ$ C, using junction-to-case thermal resistance (R_{θJC}) is more useful in additional heat sinking is used.

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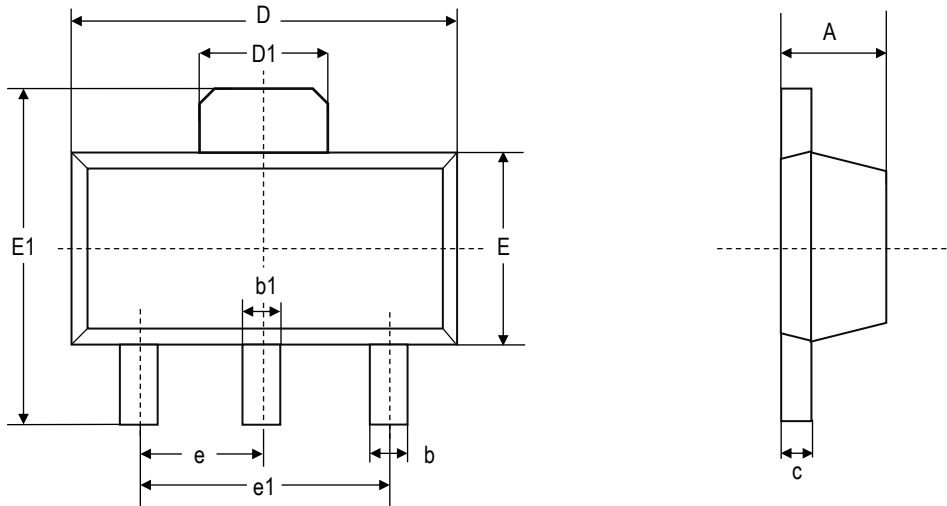
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



■ SOT-89 PACKAGE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	1.440	1.540	0.567	0.606
b	0.350	0.450	0.138	0.177
b1	0.450	0.550	0.177	0.217
c	0.350	0.450	0.138	0.177
D	4.450	4.550	1.752	0.791
D1	1.650	1.750	0.650	0.689
E	2.450	2.550	0.965	1.004
E1	3.950	4.250	1.555	1.673
e	1.450	1.550	0.571	0.610
e1	2.900	3.100	1.142	1.220
L	0.900	1.200	0.354	0.472
θ	2°	10°	2°	10°