

Single P-Channel MOSFET

DESCRIPTION

SMC3535AK 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

$V_{DS}=-30V$, $I_D=-6.6A$

$R_{DS(ON)}=45m\Omega(Typ.)@V_{GS}=-10V$
 $R_{DS(ON)}=52m\Omega(Typ.)@V_{GS}=-4.5V$
 $R_{DS(ON)}=68m\Omega(Typ.)@V_{GS}=-2.5V$

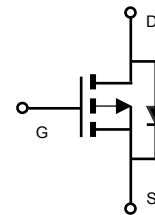
- ◆ Fast switch
- ◆ Low gate charge
- ◆ High power and current handling capability

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	$T_A=25^{\circ}C$	-6.6
		$T_A=70^{\circ}C$	-5.3
I_{DM}	Pulsed Drain Current ^b	-26.4	A
P_D	Power Dissipation ^a	$T_A=25^{\circ}C$	3.6
		$T_A=70^{\circ}C$	2.3
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 ^A	$t \leq 10s$	35	$^{\circ}C/W$
	Thermal Resistance Junction to Ambient ^{AC}	Steady-State	70	

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

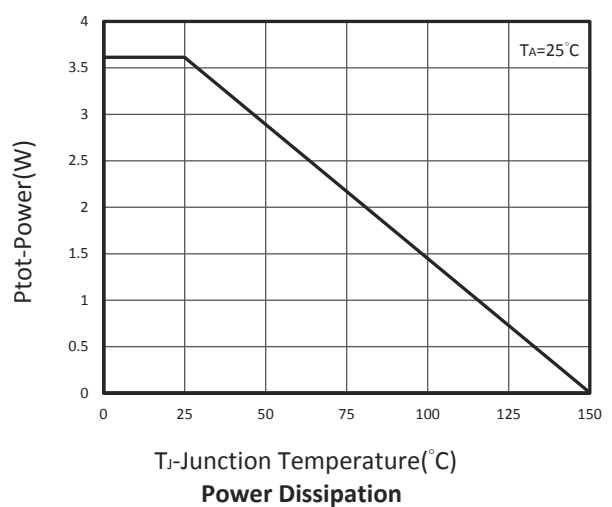
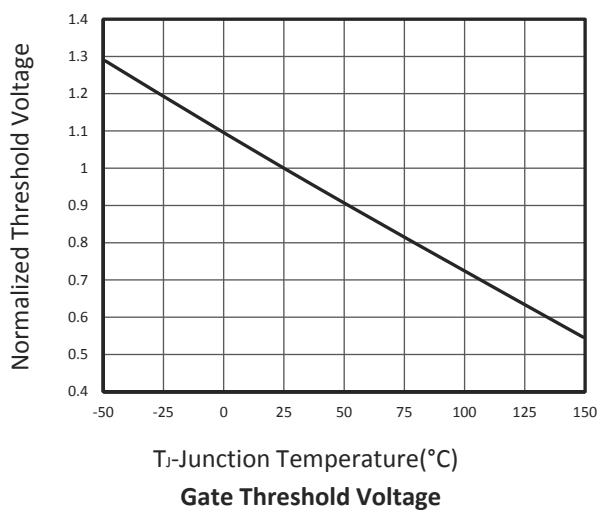
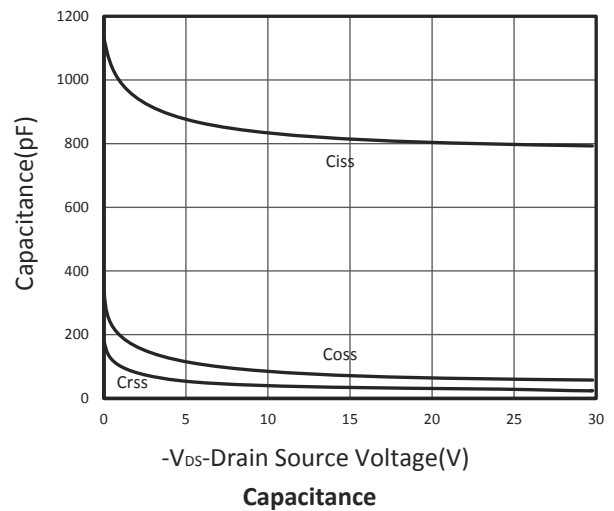
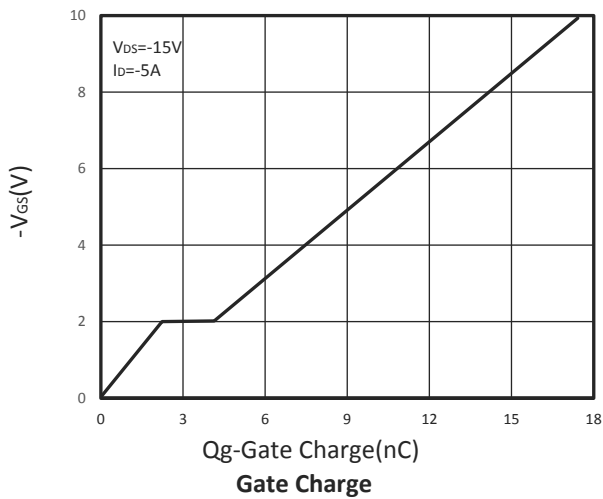
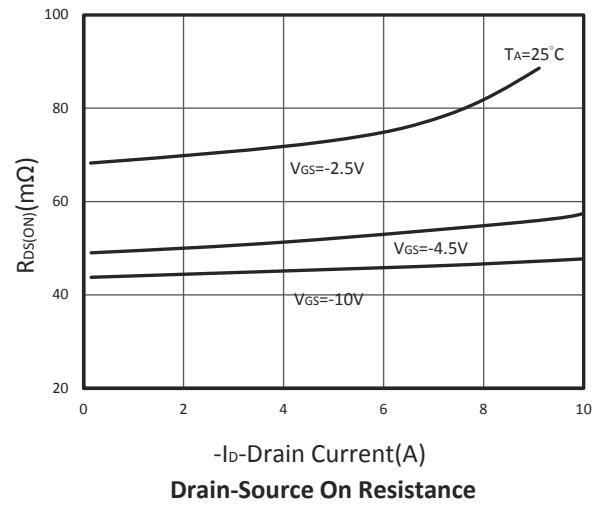
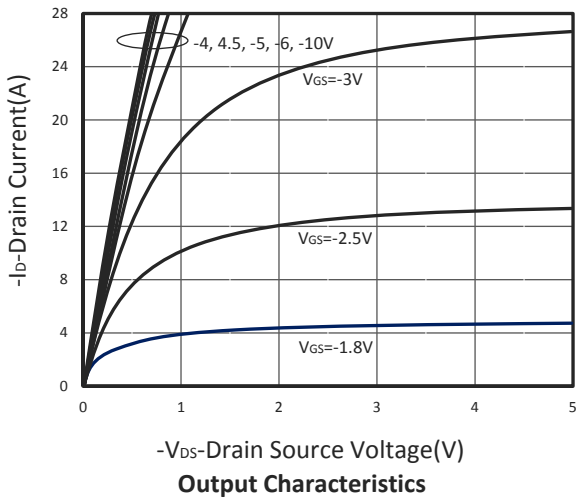
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =-250 μ A	-30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250 μ A	-0.5	-0.7	-1	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} = \pm 12V			\pm 100	nA
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 ^D	V _{GS} =-10V, I _D =-6.6A		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 =-5A		6		S
Diode Characteristics						
V _{SD}	Diode Forward Voltage ^D	I _S =-1A, V _{GS} =0V			-1	V
I _S	Diode Continuous Forward Current				-3.3	A
Dynamic and Switching Parameters^E						
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-10V, I _D =-5A		17.4	24.4	nC
Q _g	Total Gate Charge (4.5V)			8.5	11.5	
Q _{gs}	Gate-Source Charge			2.1	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			78		
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				21	40	
t _{d(off)}	Turn-Off Time			43.9	83	
t _f				10.8	21	

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

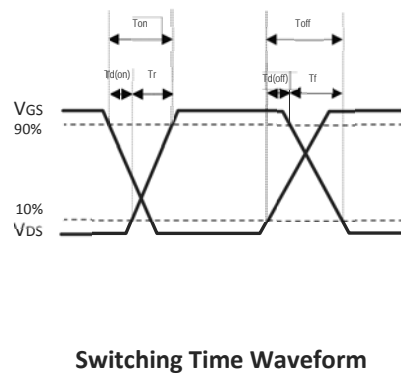
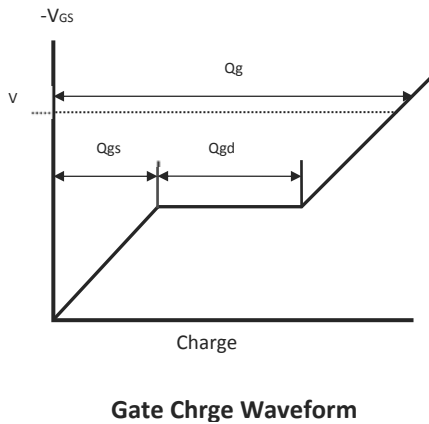
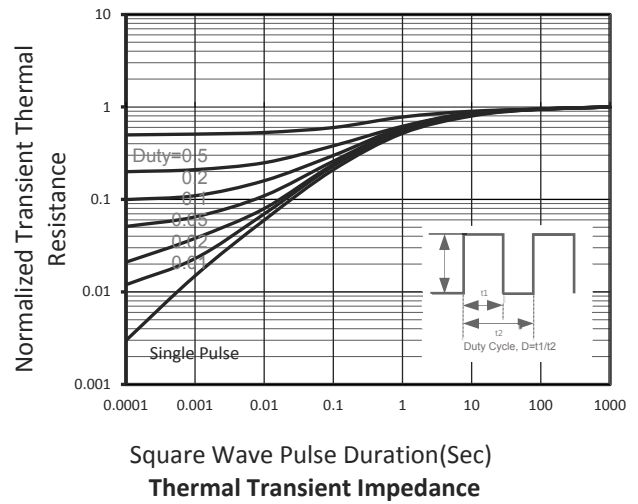
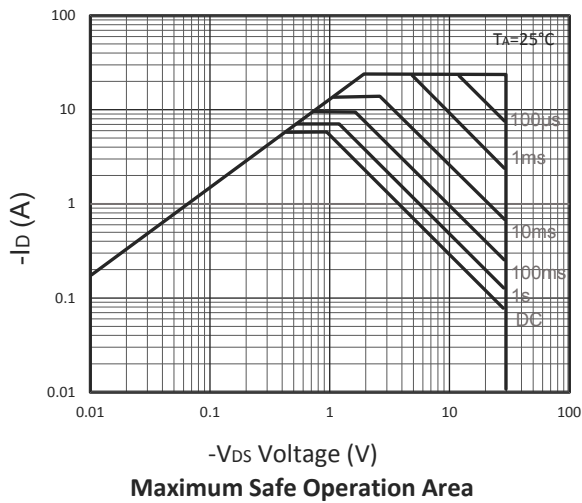
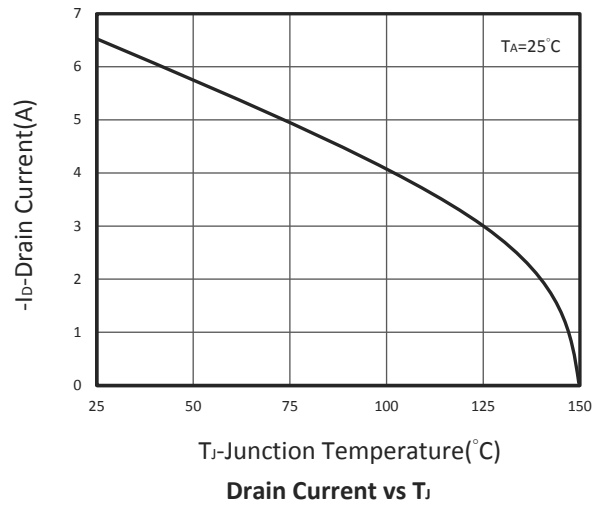
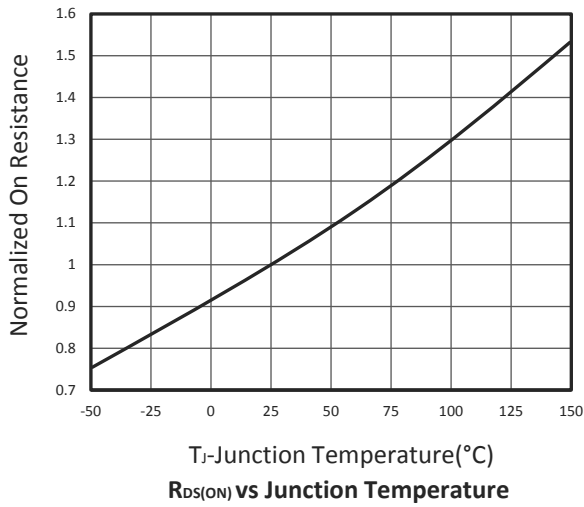
- A. Surface mounted on FR4 board using 1 in² pad size.
- B. Pulsed width limited by maximum junction temperature, T_{J(MAX)}=150 $^\circ$ C (initial temperature T_J=25 $^\circ$ C).
- C. Using \leq 10s junction-to-ambient thermal resistance is base on T_{J(MAX)}=150 $^\circ$ C.
- D. Pulse test width \leq 300 μ s and duty cycle \leq 2%.
- E. Guaranteed by design, not subject to production testing.

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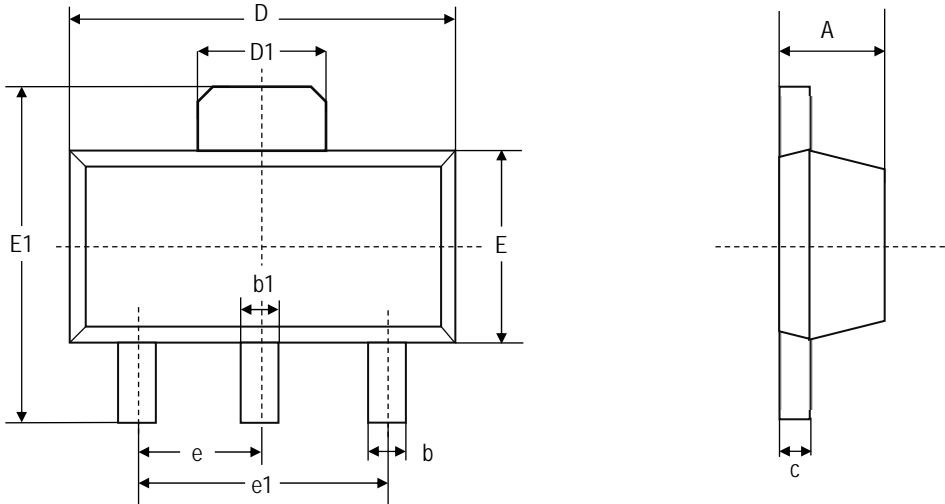
TYPICAL CHARACTERISTICS



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°