

Single P-Channel MOSFET

DESCRIPTION

SMC3207H is the P-Channel enhancement mode power field effect transistors, provide superior fast switching performance and withstand high energy pulse in the avalanche and commutation mode.

PART NUMBER INFORMATION

SMC 3207 H - TR G
 a b c d e

- a : Company name.
- b : Product Serial number.
- c : Package code H:TO-252
- d : Handling code TR:Tape&Reel
- e : Green produce code G:RoHS Compliant

FEATURES

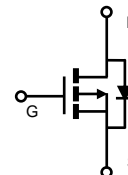
$V_{DS}=-30V$, $I_D=-69A$

$R_{DS(ON)}=7m\Omega(Typ.)@V_{GS}=-10V$
 $R_{DS(ON)}=10m\Omega(Typ.)@V_{GS}=-4.5V$

- ◆100% EAS Guaranteed
- ◆High power and current handling capability

APPLICATIONS

- ◆Load Switch
- ◆Power Applications
- ◆Portable Powered Systems



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	± 20	V
I_D	Continuous Drain Current	$T_C=25^{\circ}C$	-69
		$T_C=100^{\circ}C$	-43.5
I_{DM}	Pulsed Drain Current ^B	-276	A
I_D	Continuous Drain Current	$T_A=25^{\circ}C$	-21.8
		$T_A=70^{\circ}C$	-17.4
P_D	Power Dissipation ^A	$T_A=25^{\circ}C$	6.25
		$T_A=70^{\circ}C$	4
I_{AS}	Single Pulse Avalanche Current ^B	-40	A
E_{AS}	Single Pulse Avalanche energy $L=0.1mH$ ^{BE}	80	mJ
P_D	Power Dissipation ^C	$T_C=25^{\circ}C$	62.5
		$T_C=100^{\circ}C$	25
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		20	$^{\circ}C/W$
	Thermal Resistance Junction to Ambient ^{AC}	$t \leq 10s$	50	
$R_{\theta JC}$	Thermal Resistance Junction to Case	Steady-State	2	

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

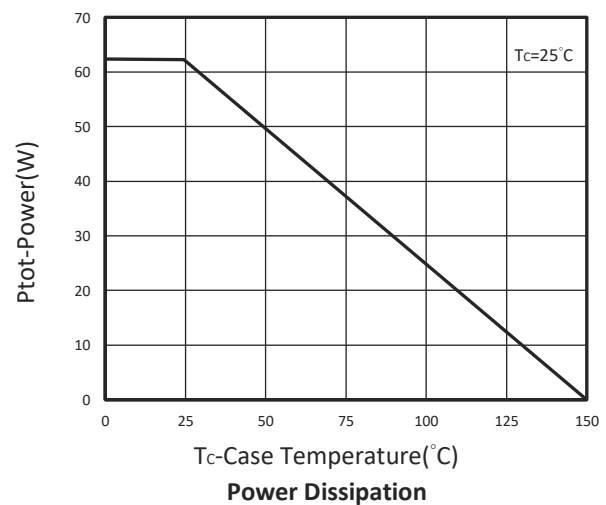
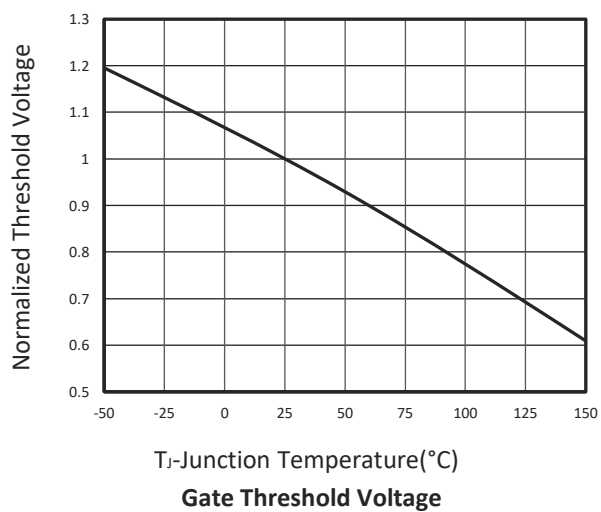
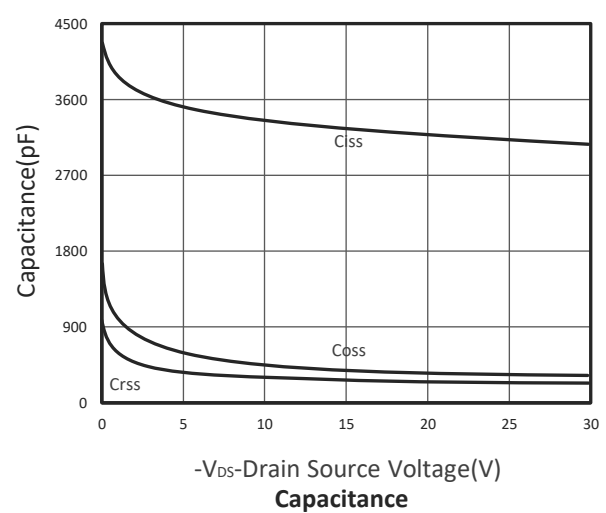
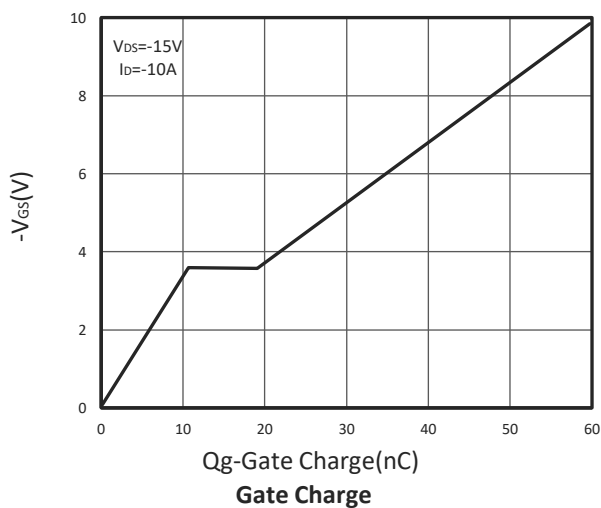
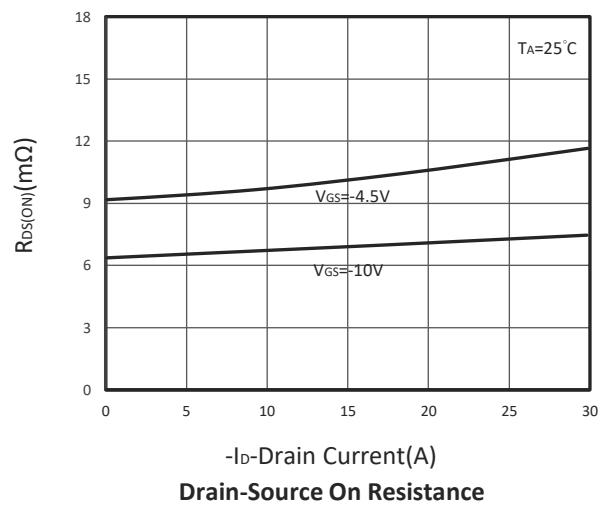
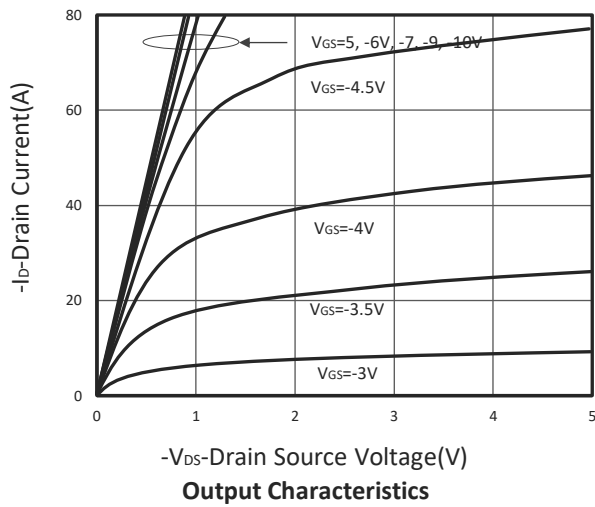
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
BV_{DSS}	Drain-Source Breakdown Voltage	$V_{GS}=0V, I_D=-250\mu A$	-30			V
$V_{GS(th)}$	Gate Threshold Voltage	$V_{DS}=V_{GS}, I_D=-250\mu A$	-1	-1.6	-2.5	V
I_{GSS}	Gate Leakage Current	$V_{DS}=0V, V_{GS}=\pm 20V$			± 100	nA
I_{DSS}	Zero Gate Voltage Drain Current	$V_{DS}=-30V, V_{GS}=0V, T_J=25^\circ\text{C}$			-1	μA
		$V_{DS}=-24V, V_{GS}=0V, T_J=75^\circ\text{C}$			-10	
$R_{DS(ON)}$	Drain-source On-Resistance ^D	$V_{GS}=-10V, I_D=-20A$ $V_{GS}=-4.5V, I_D=-15A$		7 10	8.5 13	$m\Omega$
G_{fs}	Forward Transconductance	$V_{DS}=-10V, I_D=-10A$		14.8		S
Diode Characteristics						
V_{SD}	Diode Forward Voltage ^D	$I_S=-1A, V_{GS}=0V$			-1	V
I_S	Diode Continuous Forward Current				-69	A
t_{rr}	Reverse Recovery Time	$I_S=-10A, di/dt=100A/\mu s$		21		ns
Q_{rr}	Reverse Recovery Charge			15.5		nC
Dynamic and Switching Parameters^F						
Q_g	Total Gate Charge	$V_{DS}=-15V, V_{GS}=-10V,$ $I_D=-10A$		61	85	nC
Q_g	Total Gate Charge (4.5V)			30	42	
Q_{gs}	Gate-Source Charge			10.6	14.3	
Q_{gd}	Gate-Drain Charge			9	12.6	
C_{iss}	Input Capacitance	$V_{DS}=-15V, V_{GS}=0V, f=1\text{MHz}$		3230		pF
C_{oss}	Output Capacitance			369		
C_{rss}	Reverse Transfer Capacitance			265		
R_g	Gate Resistance	$V_{GS}=0V, V_{DS}=0V, f=1\text{MHz}$		8.3		Ω
$t_{d(on)}$	Turn-On Time	$V_{DD}=-15V, V_{GS}=-10V, R_G=3\Omega$ $I_D=-1A$		24		nS
t_r				11.6		
$t_{d(off)}$	Turn-Off Time			78.8		
t_f				33.8		

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

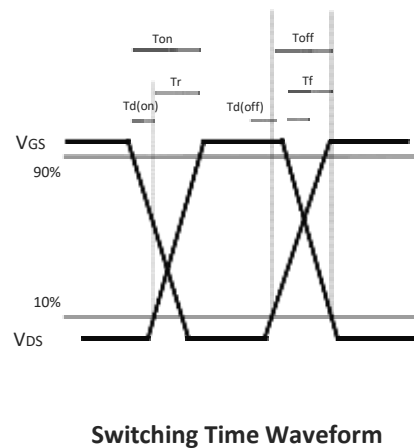
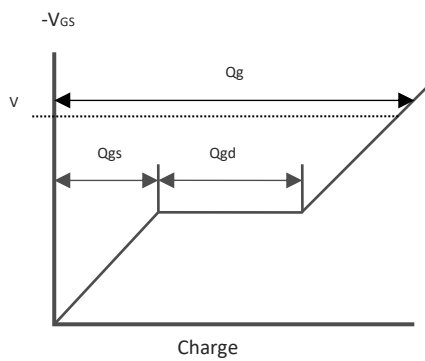
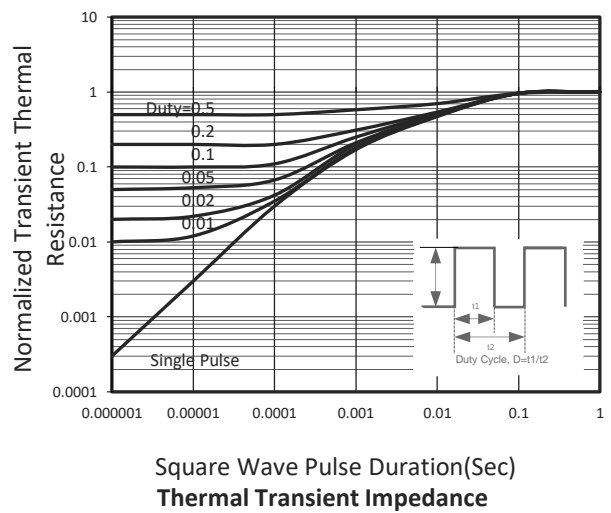
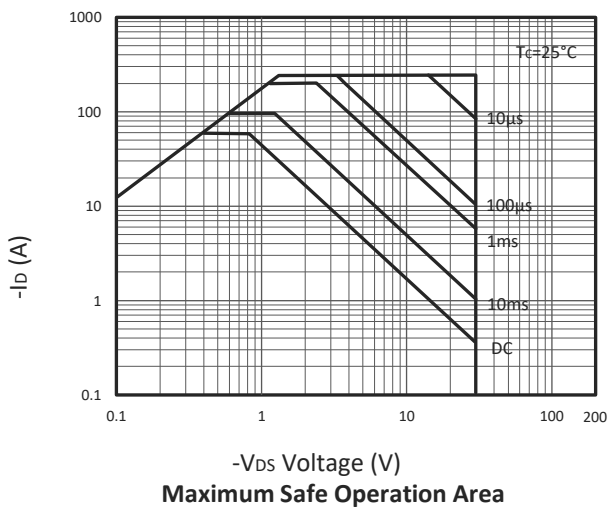
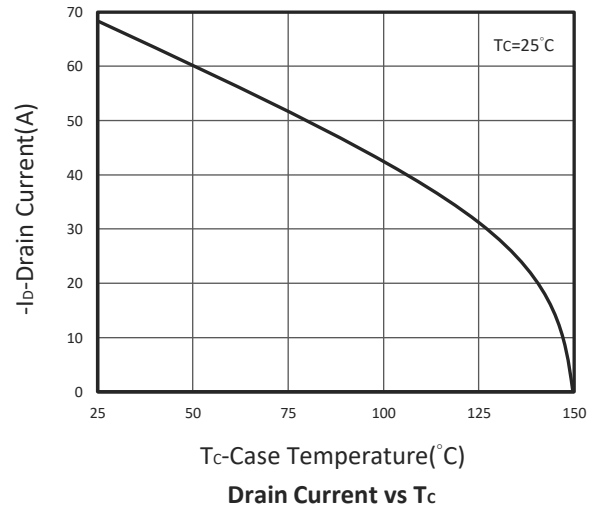
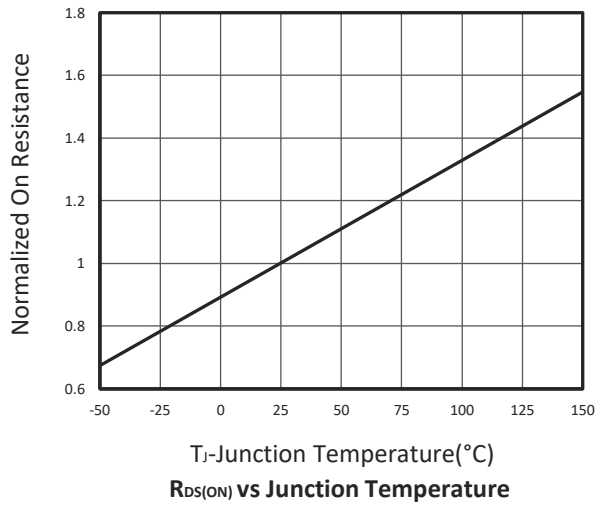
- A. Surface mounted on FR4 board using 1 in² pad size.
- B. Pulsed width limited by maximum junction temperature, $T_{J(MAX)}=150^\circ\text{C}$ (initial temperature $T_J=25^\circ\text{C}$).
- C. Using $\leq 10s$ junction-to-ambient thermal resistance is base on $T_{J(MAX)}=150^\circ\text{C}$.
- D. Pulse test width $\leq 300\mu s$ and duty cycle $\leq 2\%$.
- E. The EAS data shows maximum, The test condition is $V_{DD}=-25V, V_{GS}=-10V, L=0.1\text{mH}, I_{AS}=-40A$
- F. Guaranteed by design, not subject to production testing.

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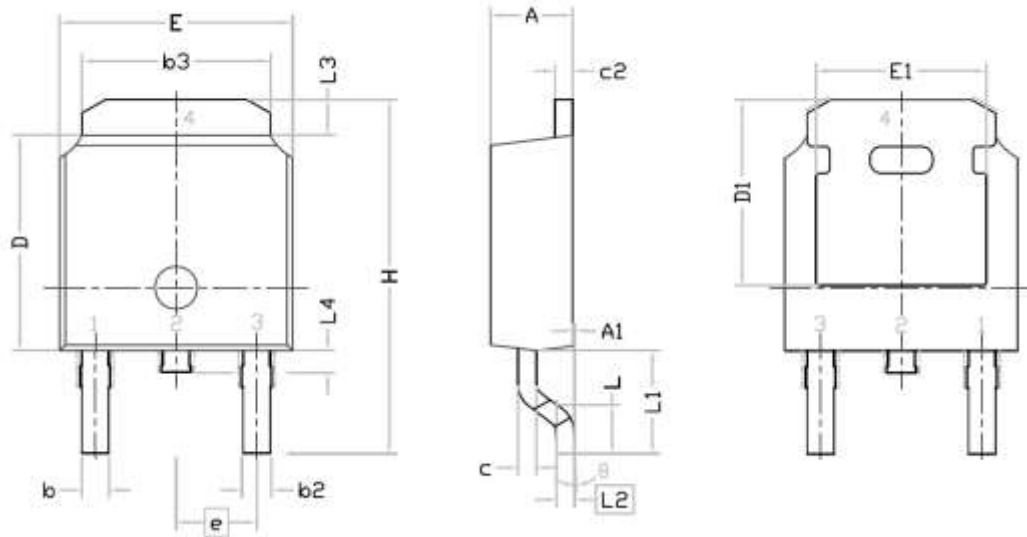
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



TO-252 PACKAGE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	2.200	2.380	0.087	0.094
A1	0.000	0.127	0.000	0.005
b	0.640	0.880	0.025	0.035
b2	0.770	1.140	0.030	0.045
b3	5.210	5.460	0.205	0.215
c	0.460	0.600	0.018	0.024
c2	0.460	0.580	0.018	0.023
D	6.000	6.223	0.236	0.245
D1	5.210	-	0.205	-
E	6.400	6.731	0.252	0.265
E1	4.400	-	0.173	-
e	2.286 BSC.		0.090 BSC.	
H	9.400	10.40	0.370	0.409
L	1.400	1.770	0.055	0.070
L1	2.743 REF.		0.108 REF.	
L2	0.508 BSC.		0.020 BSC.	
L3	0.890	1.270	0.035	0.050
L4	0.640	1.010	0.025	0.040
Θ	0°	10°	0°	10°

Recommended Land Pattern

