

Single P-Channel MOSFET

DESCRIPTION

The SMC3241PA uses trench MOSFET technology. Provides extremely low $R_{DS(ON)}$, Low resistance package and excellent fast switching performance. This device is ideal for efficient and fast switching applications.

PART NUMBER INFORMATION

SMC 3241 PA - TR G
 a b c d e

a : Company name.
 b : Product Serial number.
 c : Package code PA:DFN5X6A-8
 d : Handling code TR:Tape&Reel
 e : Green produce code G:RoHS Compliant

FEATURES

$V_{DS}=-30V$, $I_D=-32A$

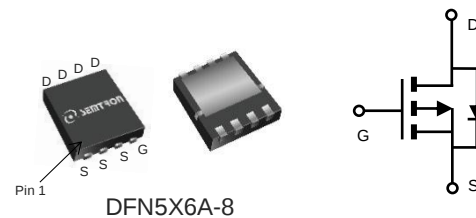
$R_{DS(ON)}=16m\Omega(Typ.)@V_{GS}=-10V$

$R_{DS(ON)}=24m\Omega(Typ.)@V_{GS}=-4.5V$

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

APPLICATIONS

- ◆ Power Management
- ◆ DC/DC Converters



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		±25	V
I _D	Continuous Drain Current	T _C =25°C	-32	A
		T _C =100C	-20	A
I _{DM}	Pulsed Drain Current ^B		-128	A
I _D	Continuous Drain Current	T _A =25°C	-12.5	A
		T _A =70°C	-10	A
P _D	Power Dissipation ^A	T _A =25°C	5	W
		T _A =70°C	3.2	W
I _{AS}	Avalanche Current ^A		-25	A
E _{AS}	Single Pulse Avalanche energy L=0.1mH ^B		31.3	mJ
P _D	Power Dissipation ^C	T _C =25°C	31.3	W
		T _C =100°C	12.5	W
T _J	Operation Junction Temperature		-55/150	°C
T _{STG}	Storage Temperature Range		-55/150	°C

THERMAL RESISTANCE

Symbol	Parameter	Typ	Max	Units
$R_{\theta JA}$	Thermal Resistance Junction to Ambient ^A	$t \leq 10s$	25	$^{\circ}C/W$
	Thermal Resistance Junction to Ambient ^{AC}	Steady-State	60	
$R_{\theta JC}$	Thermal Resistance Junction to Case		4	

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

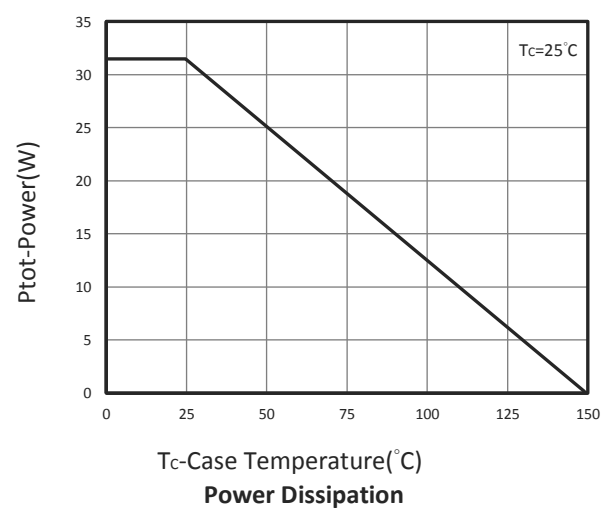
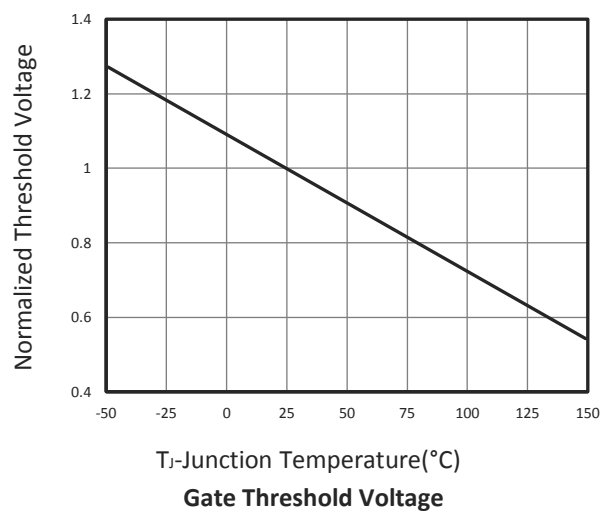
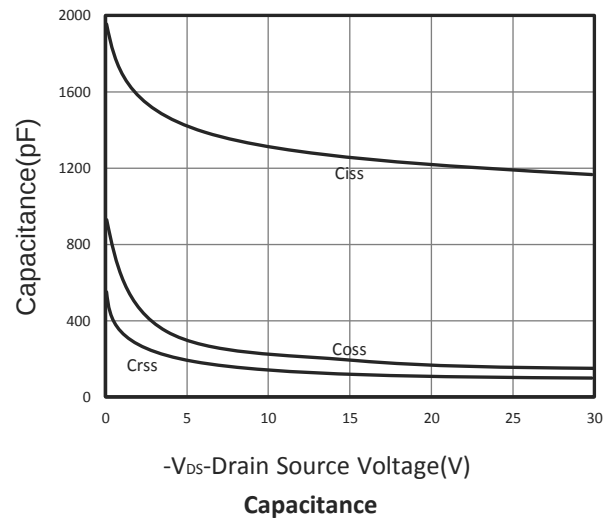
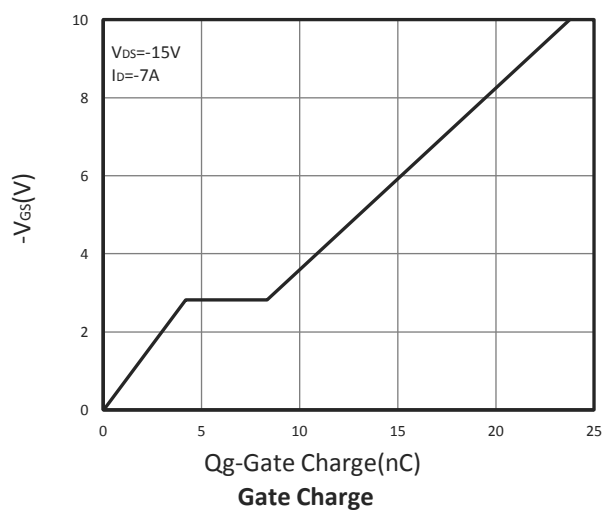
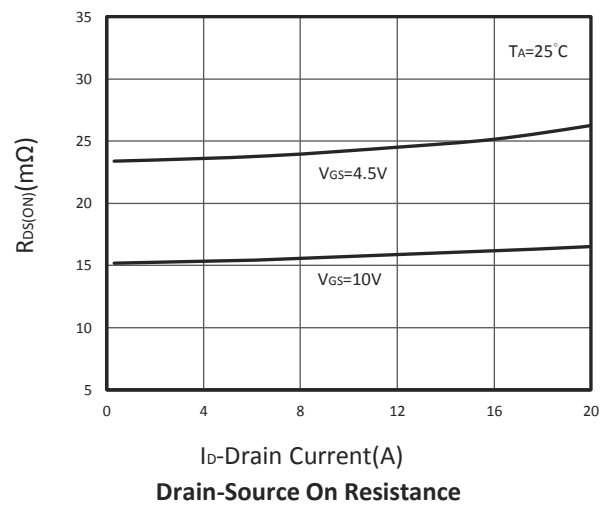
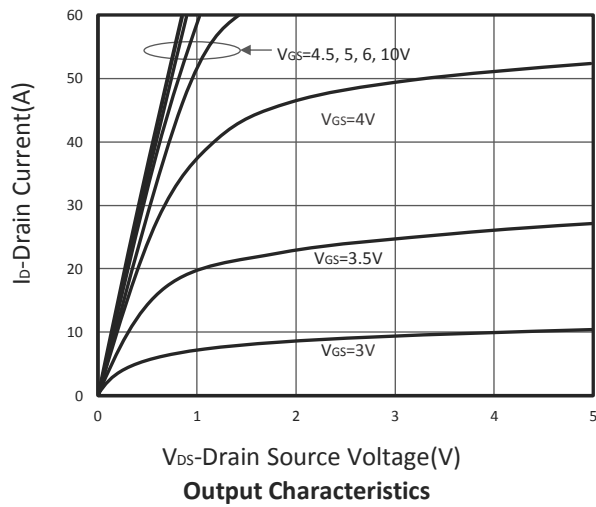
Symbol	Parameter	Condition	Min	Typ	Max	Unit
Static Parameters						
BV _{DSS}	Drain-Source Breakdown Voltage	V _{GS} =0V, I _D =250μA	-30			V
V _{GS(th)}	Gate Threshold Voltage	V _{DS} =V _{GS} , I _D =-250μA	-1.0	-1.6	-2.5	V
I _{GSS}	Gate Leakage Current	V _{DS} =0V, V _{GS} =±20V			±100	nA
I _{DSS}	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 =75°C			-10	
R _{DS(ON)}	Drain-source On-Resistance °	V _{GS} =-10V, I _D =-12.5A V _{GS} =-4.5V, I _D =-8A		16 24	20 29	mΩ
G _{fs}	Forward Transconductance	V _{DS} =-10V, I _D =-7A		12.5		S
Diode Characteristics						
V _{SD}	Diode Forward Voltage °	I _S =-1A, V _{GS} =0V			-1	V
I _S	Diode Continuous Forward Current				-32	A
t _{rr}	Reverse Recovery Time	I _S =-7A, dI/dt=100A/μs		11		ns
Q _{rr}	Reverse Recovery Charge			5.8		nC
Dynamic and Switching Parameters °						
Q _g	Total Gate Charge	V _{DS} =-15V, V _{GS} =-10V, I _D =-7A		23.6	33	nC
Q _g	Total Gate Charge (4.5V)			11.5	16.1	
Q _{gs}	Gate-Source Charge			4.2	5.9	
Q _{gd}	Gate-Drain Charge			4.4	6.2	
C _{iss}	Input Capacitance	V _{DS} =-15V, V _{GS} =0V, f=1MHz		1280		pF
C _{oss}	Output Capacitance			175		
C _{rss}	Reverse Transfer Capacitance			125		
t _{d(on)}	Turn-On Time	V _{DD} =-15V, V _{GEN} =-10V R _G =3.3Ω, I _D =-1A		6.1	12	ns
t _r				14	27	
t _{d(off)}	Turn-Off Time			34	65	
t _f				13.2	25	

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

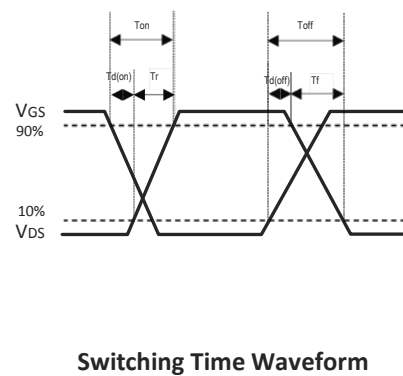
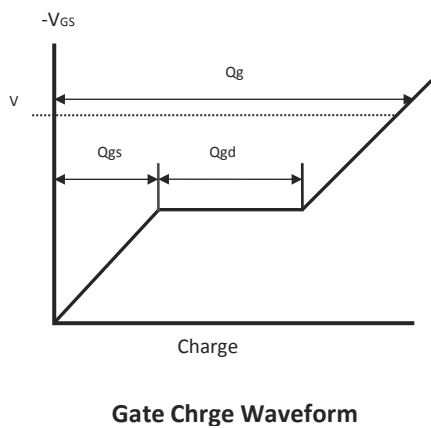
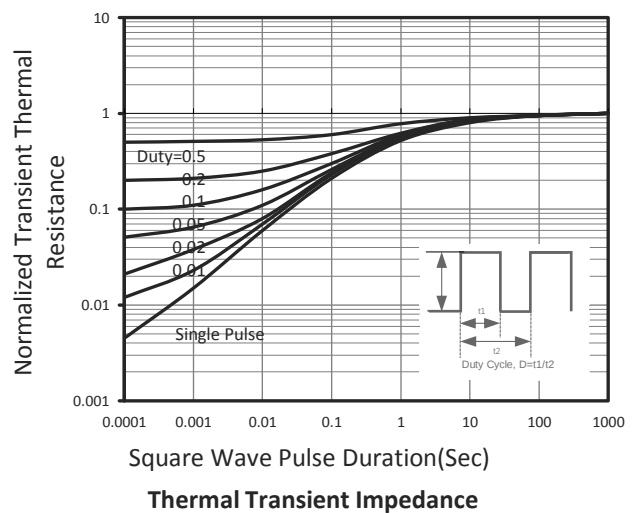
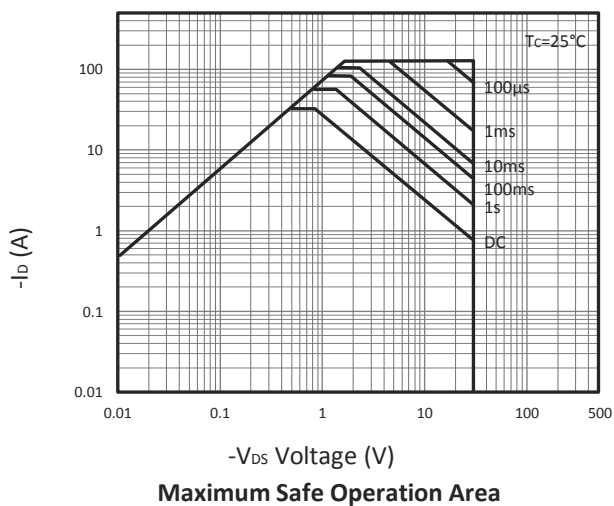
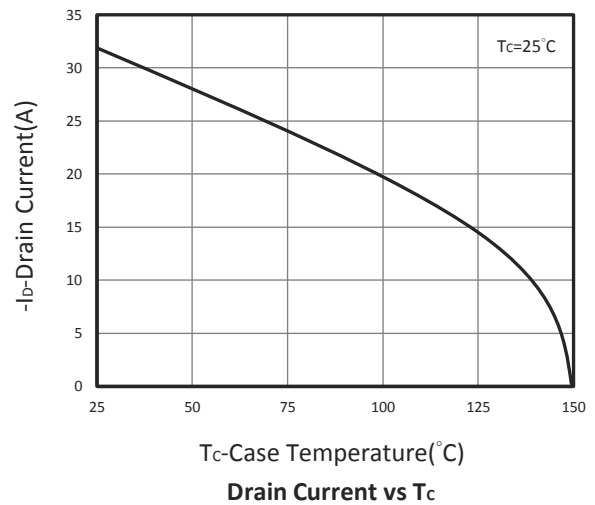
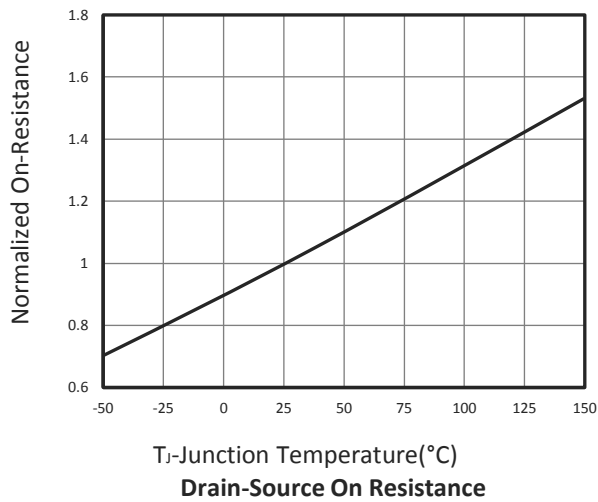
- A. Surface mounted on FR4 board using 1 in² pad size.
- B. Pulsed width limited by maximum junction temperature, $T_{J(MAX)}=150^\circ\text{C}$ (initial temperature $T_J=25^\circ\text{C}$).
- C. Using $\leq 10s$ junction-to-ambient thermal resistance is base on $T_{J(MAX)}=150^\circ\text{C}$.
- D.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

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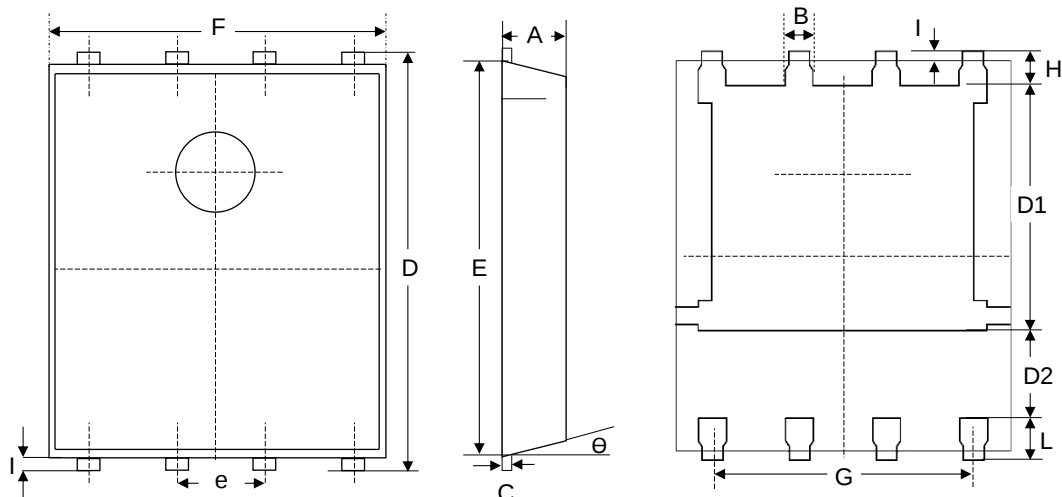
TYPICAL CHARACTERISTICS



TYPICAL CHARACTERISTICS



DFN5X6A PACKAGE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min.	Max.	Min.	Max.
A	0.900	1.100	0.035	0.043
B	0.330	0.510	0.013	0.020
C	0.200	0.300	0.008	0.012
D	5.900	6.100	0.232	0.240
D1	3.380	3.780	0.133	0.149
D2	1.100		0.043	
E	5.700	5.800	0.224	0.228
e	1.270BSC.		1.270BSC.	
F	4.800	5.000	0.189	0.197
G	0.361	0.396	0.014	0.016
H	0.410	0.610	0.016	0.024
I	0.060	0.200	0.002	0.008
L	0.510	0.710	0.020	0.028
θ	0°	12°	0°	12°

Recommended Land Pattern

