Elektronische Bauelemente

SMS3407A-C

-3.3A, -30V, $R_{DS(ON)}$ 52mΩ
P-Channel Enhancement Mode Power MOSFET

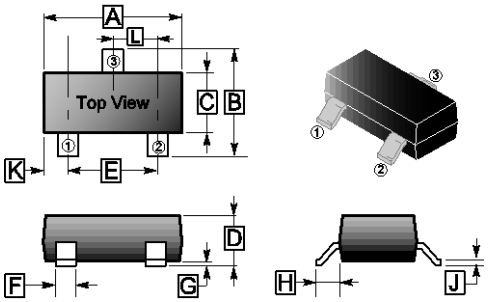
RoHS Compliant Product
A suffix of "-C" specifies halogen & lead-free

DESCRIPTION

The SMS3407A-C is the highest performance trench P-ch MOSFETs with extreme high cell density, which provide excellent $R_{DS(ON)}$ and gate charge for most of the small power switching and load switch applications.

The SMS3407A-C meet the RoHS and Green Product Requirement with full function reliability approved.

SOT-23



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.65	3.10	G	0	0.18
B	2.10	3.00	H	0.55 REF.	
C	1.10	1.80	J	0.05	0.26
D	0.89	1.40	K	0.60 REF.	
E	1.70	2.30	L	0.95 TYP.	
F	0.28	0.55			

FEATURES

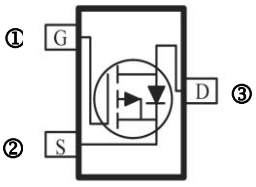
- Advanced High Cell Density Trench Technology
- Super Low Gate Charge
- Green Device Available

PACKAGE INFORMATION

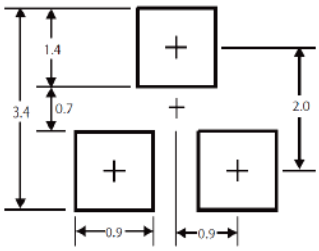
Package	MPQ	Leader Size
SOT-23	3K	7 inch

ORDER INFORMATION

Part Number	Type
SMS3407A-C	Lead (Pb)-free and Halogen-free



Mounting Pad Layout



*Dimensions in millimeters

ABSOLUTE MAXIMUM RATINGS

Parameter		Symbol	Ratings		Unit
			t≦10s	Steady State	
Drain-Source Voltage		V_{DS}	-30		V
Gate-Source Voltage		V_{GS}	±20		V
Continuous Drain Current @V_{GS}= -10V [1]	T_A=25°C	I_D	-4.3	-3.3	A
	T_A=70°C		-3.5	-2.7	
Pulsed Drain Current [2]		I_{DM}	-17		A
Power Dissipation [3]	T_A=25°C	P_D	1.32	1	W
	T_A=70°C		0.84	0.64	
Operating Junction & Storage Temperature		T_J, T_{STG}	150, -55~150		°C
Thermal Resistance Ratings					
Thermal Resistance Junction-Ambient [1]		$R_{\theta JA}$	125		°C/W
			t≦10s, 95		
Thermal Resistance Junction-Case [1]		$R_{\theta JC}$	80		

ELECTRICAL CHARACTERISTICS (T_J=25°C unless otherwise specified)

Parameter		Symbol	Min.	Typ.	Max.	Unit	Test Conditions
Drain-Source Breakdown Voltage		BV_{DSS}	-30	-	-	V	V_{GS}=0, I_D= -250μA
Gate-Threshold Voltage		$V_{GS(th)}$	-1.2	-1.6	-2.5	V	V_{DS}=V_{GS}, I_D= -250μA
Forward Tranconductance		g_{fs}	-	11	-	S	V_{DS}= -5V, I_D= -3A
Gate-Source Leakage Current		I_{GSS}	-	-	±100	nA	V_{GS}= ±20V, V_{DS}=0
Drain-Source Leakage Current	T_J=25°C	I_{DSS}	-	-	-1	μA	V_{DS}= -24V, V_{GS}=0
	T_J=55°C		-	-	-5		
Static Drain-Source On-Resistance [2]		$R_{DS(ON)}$	-	42	52	mΩ	V_{GS}= -10V, I_D= -3A
			-	75	90		V_{GS}= -4.5V, I_D= -2A
Total Gate Charge		Q_g	-	6.4	-	nC	I_D= -3A V_{DS}= -15V V_{GS}= -4.5V
Gate-Source Charge		Q_{gs}	-	2.3	-		
Gate-Drain Charge		Q_{gd}	-	1.9	-		
Turn-on Delay Time		$T_{d(on)}$	-	2.8	-	nS	I_D= -3A V_{GS}= -10V V_{DD}= -15V R_G=3Ω
Rise Time		T_r	-	8.4	-		
Turn-off Delay Time		$T_{d(off)}$	-	39	-		
Fall Time		T_f	-	6	-		
Input Capacitance		C_{iss}	-	583	-	pF	V_{GS}=0 V_{DS}= -15V f=1MHz
Output Capacitance		C_{oss}	-	100	-		
Reverse Transfer Capacitance		C_{rss}	-	80	-		
Source-Drain Diode							
Forward Voltage [2]		V_{SD}	-	-	-1	V	V_{GS}=0, I_S= -1A, T_J=25°C
Continuous Source Current [1 4]		I_S	-	-	-3.3	A	V_G=V_D=0V, Force Current

Notes:
1. The data tested by surface mounted on 1inch^2 FR-4 Board with 2oz copper.
2. The data tested by pulsed, Pulse Width≦300μs, Duty Cycle≦2%.
3. The power dissipation is limited by 150°C junction temperature.
4. The data is theoretically the same as I_D and I_{DM}, in real applications, should be limited by total power dissipation.

CHARACTERISTIC CURVES

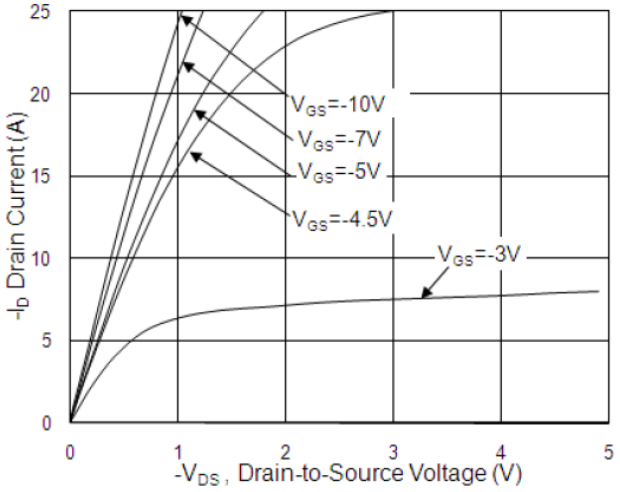


Fig.1 Typical Output Characteristics

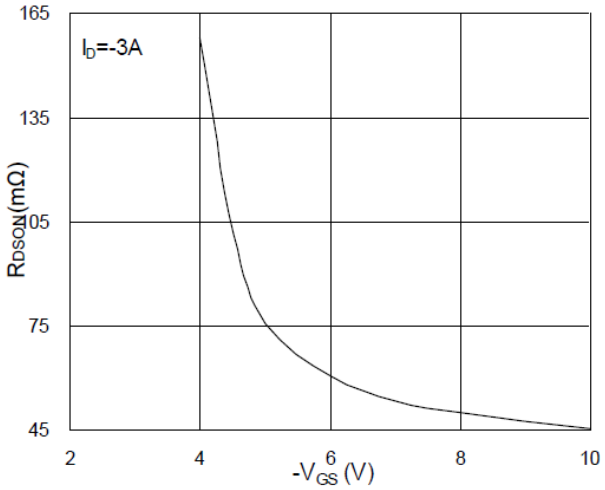


Fig.2 On-Resistance vs. G-S Voltage

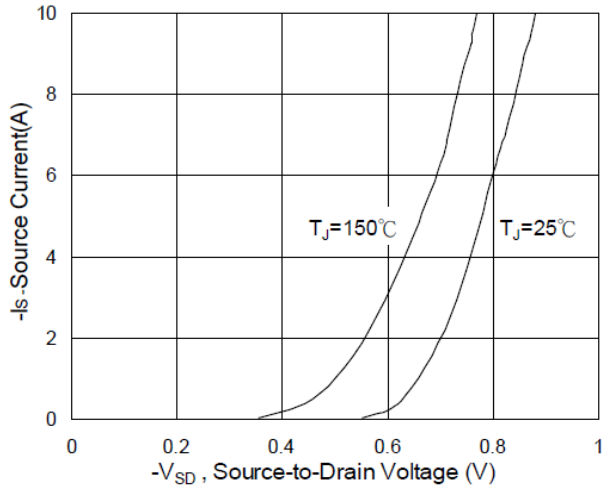


Fig.3 Source Drain Forward Characteristics

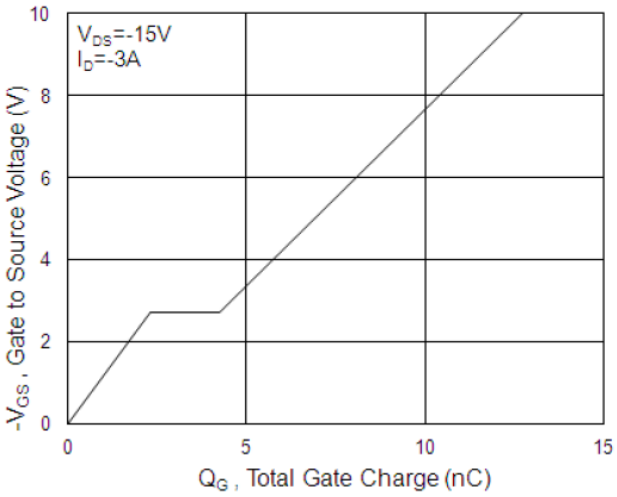


Fig.4 Gate-Charge Characteristics

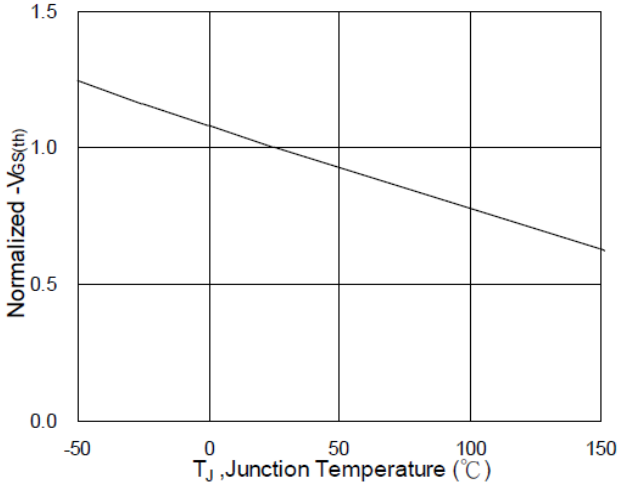


Fig.5 Normalized $V_{GS(th)}$ vs. T_J

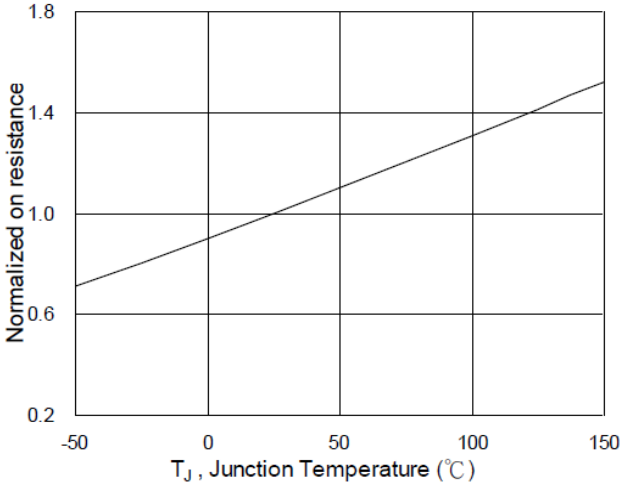


Fig.6 Normalized R_{DSON} vs T_J

CHARACTERISTIC CURVES

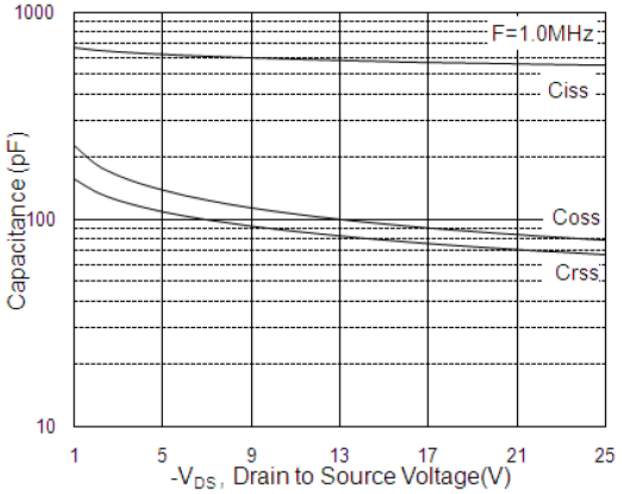


Fig.7 Capacitance

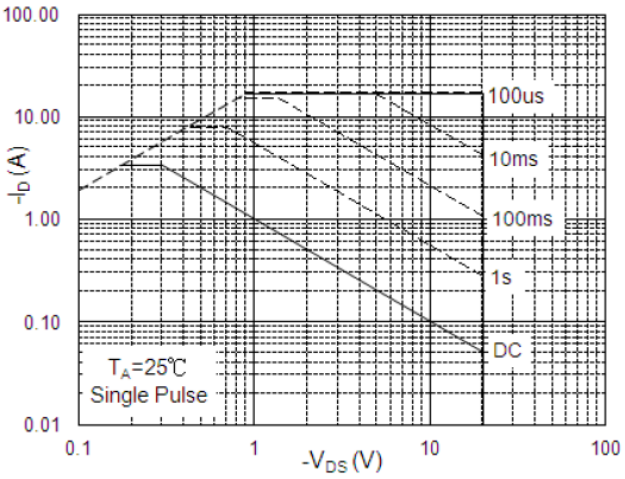


Fig.8 Safe Operating Area

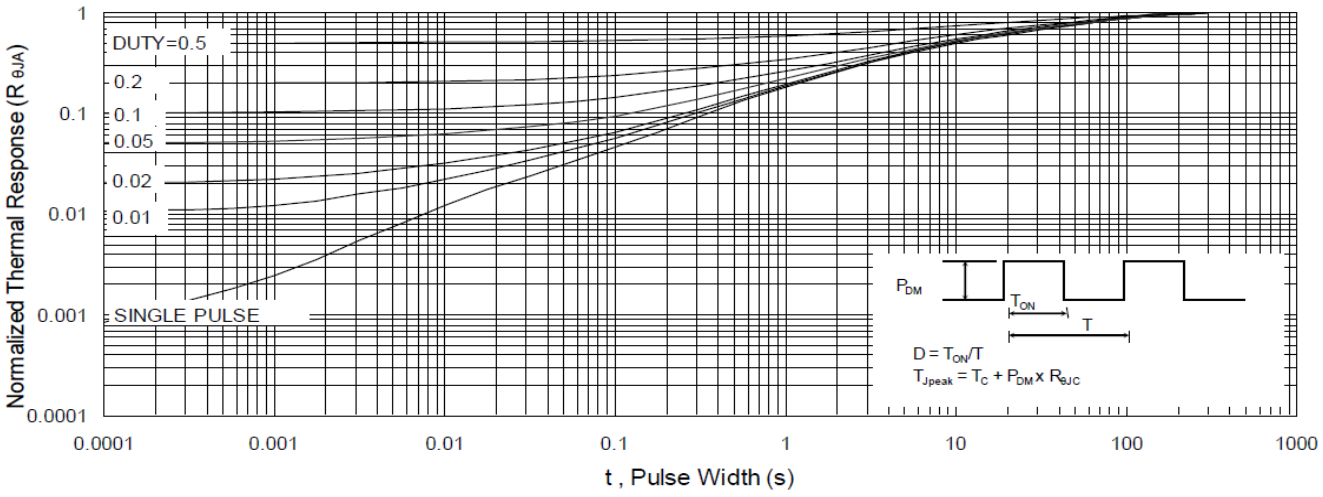


Fig.9 Normalized Maximum Transient Thermal Impedance

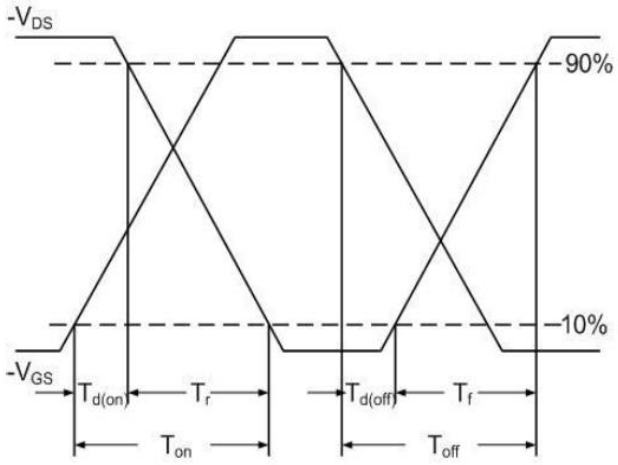


Fig.10 Switching Time Waveform

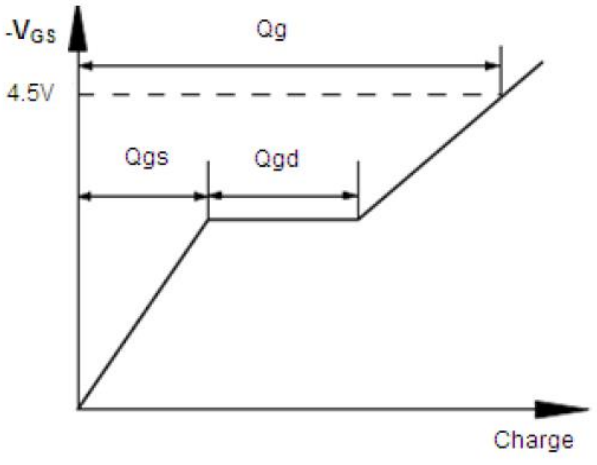


Fig.11 Gate Charge Waveform