Elektronische Bauelemente

SMG5406

3.6A , 30V , $R_{DS(ON)}$ 65 mΩ
N-Channel Enhancement Mode MOSFET

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

DESCRIPTION

The SMG5406 utilized advanced processing techniques to achieve the lowest possible on-resistance, extremely efficient and cost-effectiveness device. The SMG5406 is universally used for all commercial-industrial applications.

FEATURES

- Simple Drive Requirement
- Small Package Outline

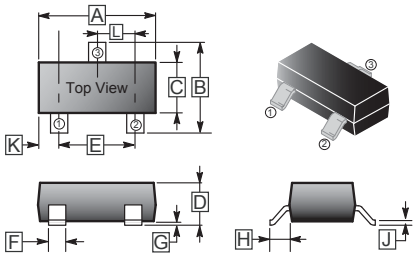
MARKING

5406

PACKAGE INFORMATION

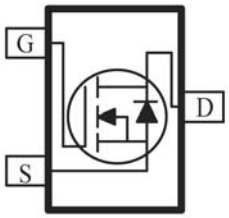
Package	MPQ	Leader Size
SC-59	3K	7 inch

SC-59



REF.	Millimeter		REF.	Millimeter	
	Min.	Max.		Min.	Max.
A	2.70	3.10	G	0.10 REF.	
B	2.25	3.00	H	0.40 REF.	
C	1.30	1.70	J	0.10	0.20
D	1.00	1.40	K	0.45	0.55
E	1.70	2.30	L	0.85	1.15
F	0.35	0.50			

TOP VIEW



ABSOLUTE MAXIMUM RATINGS (T_A=25°C unless otherwise specified)

Parameter		Symbol	Ratings	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current [2] , V_{GS}@10V	T_A=25°C	I_D	3.6	A
	T_A=70°C		2.8	
Pulsed Drain Current [1]		I_{DM}	10	A
Power Dissipation	T_A=25°C	P_D	1.38	W
Linear Derating Factor			0.01	W / °C
Operating Junction and Storage Temperature Range		T_j, T_{stg}	-55~150	°C
Thermal Resistance Rating				
Maximum Junction to Ambient [2]		$R_{\theta JA}$	90	°C / W

Notes:
1. Pulse width limited by Max. junction temperature.
2. Surface mounted on 1 in^2 copper pad of FR4 board; 270℃/W when mounted on Min. copper pad.

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

Parameter	Symbol	Min.	Typ.	Max.	Unit	Teat Conditions
Static						
Drain-Source Breakdown Voltage	BV_{DSS}	30	-	-	V	V_{GS}=0, I_D=250μA
Gate-Threshold Voltage	$V_{GS(th)}$	1	-	3	V	V_{DS}=V_{GS}, I_D=250μA
Gate-Body Leakage Current	I_{GSS}	-	-	±100	nA	V_{GS}=±20V
Drain-Source Leakage Current	I_{DSS}	-	-	1	μA	V_{DS}=30V, V_{GS}=0
		-	-	10		V_{DS}=24V, V_{GS}=0
Drain-Source On-Resistance [1]	$R_{DS(ON)}$	-	-	65	mΩ	V_{GS}=10V, I_D=3.6A
		-	-	90		V_{GS}=4.5V, I_D=2.8A
Forward Transconductance	g_{fs}	-	11	-	S	V_{DS}=5V, I_D=3.6A
Dynamic						
Total Gate Charge[1]	Q_g	-	3	5	nC	V_{DS}=24V, V_{GS}=4.5V, I_D=2.5A
Gate-Source Charge	Q_{gs}	-	0.8	-		
Gate-Drain Charge	Q_{gd}	-	1.8	-		
Turn-on Delay Time[1]	$T_{d(on)}$	-	5	-	nS	V_{DS}=15V, V_{GS}=10V, R_G=3.3Ω, R_D=15Ω, I_D=1A
Rise Time	T_r	-	9	-		
Turn-off Delay Time	$T_{d(off)}$	-	11	-		
Fall Time	T_f	-	2	-		
Input Capacitance	Ciss	-	120	290	pF	V_{GS}=0, V_{DS}=25V, f=1.0MHz
Output Capacitance	Coss	-	62	-		
Reverse Transfer Capacitance	Crss	-	24	-		
Gate Resistance	Rg	-	3.5	-	Ω	f=1.0MHz
Source-Drain Diode						
Diode Forward Voltage[1]	V_{SD}	-	-	1.0	V	I_S=1A, V_{GS}=0
Reverse Recovery Time[1]	T_{RR}	-	7.5	-	ns	I_S=3.5A, V_{GS}=0 dI/dt=100A/μs
Reverse Recovery Charge	Q_{RR}	-	2.5	-	nC	

Notes:
1. Pulse width≦300us, duty cycle≦2%.

CHARACTERISTIC CURVES

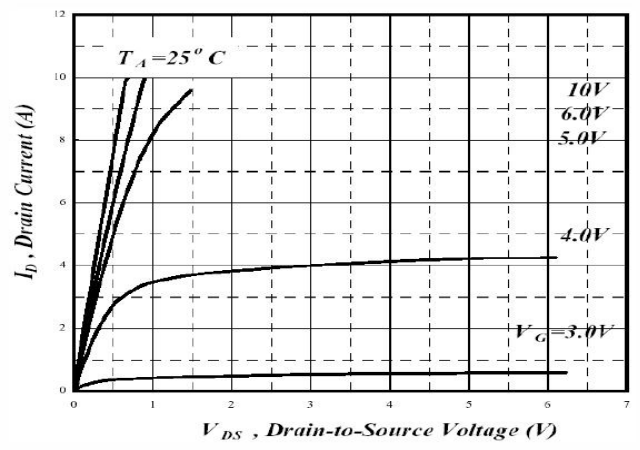


Fig 1. Typical Output Characteristics

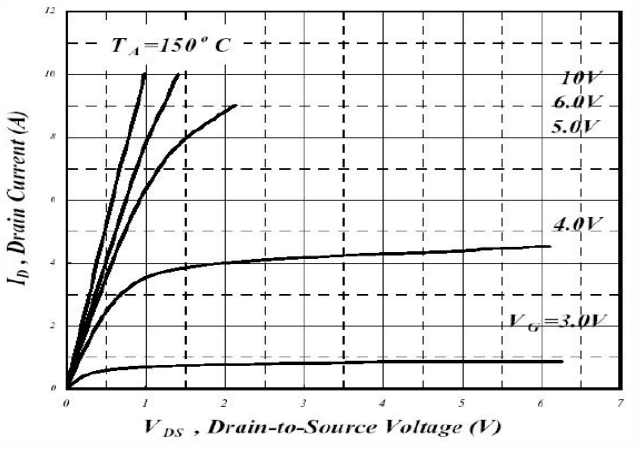


Fig 2. Typical Output Characteristics

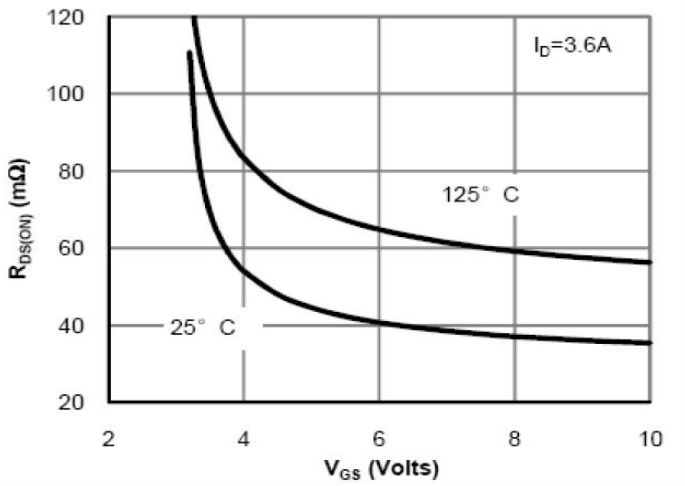


Fig 3. On-Resistance v.s. Gate Voltage

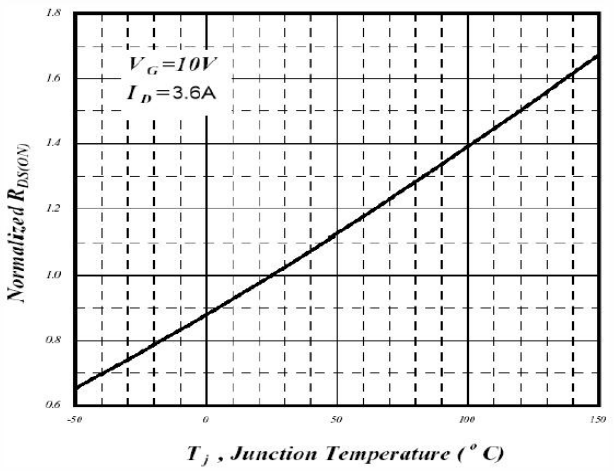


Fig 4. Normalized On-Resistance v.s. Junction Temperature

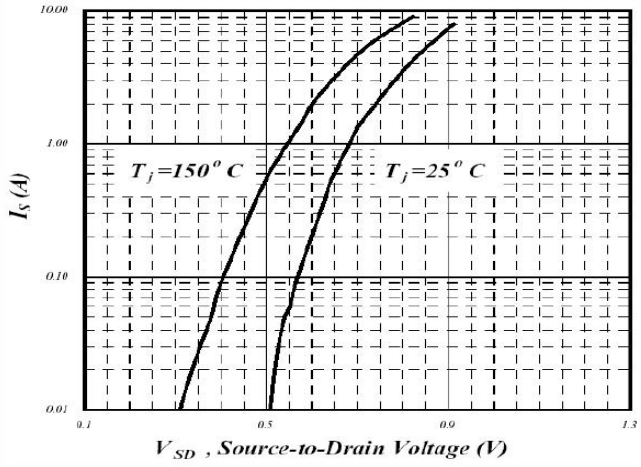


Fig 5. Forward Characteristics of Reverse Diode

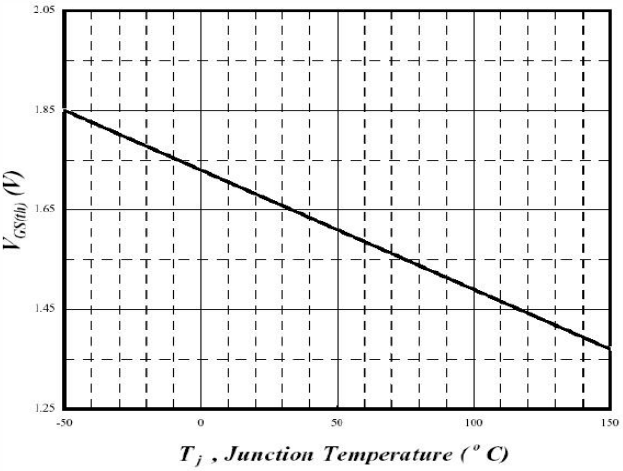


Fig 6. Gate Threshold Voltage v.s. Junction Temperature

CHARACTERISTIC CURVES

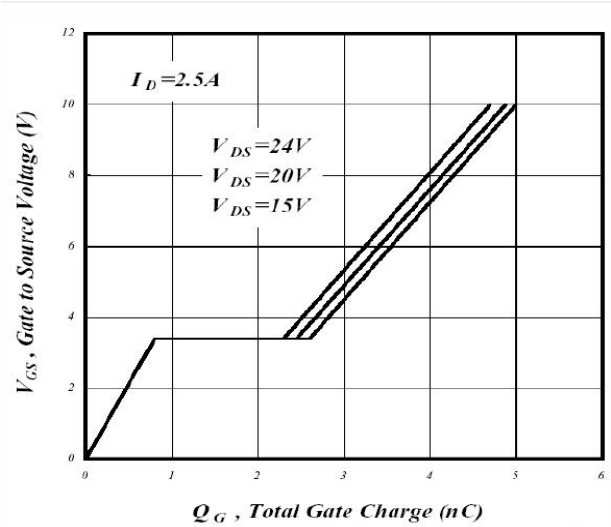


Fig 7. Gate Charge Characteristics

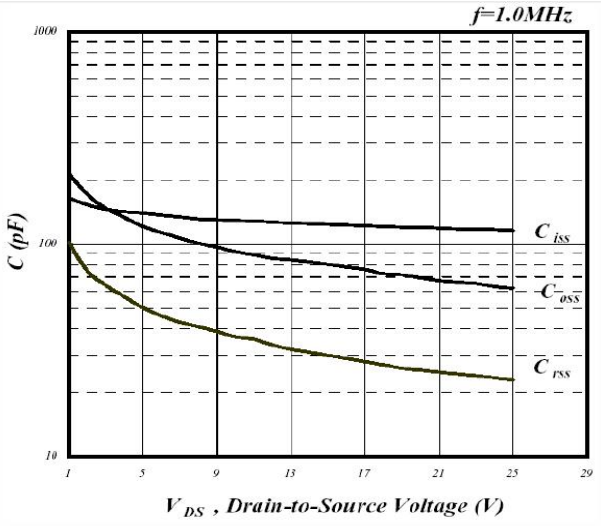


Fig 8. Typical Capacitance Characteristics

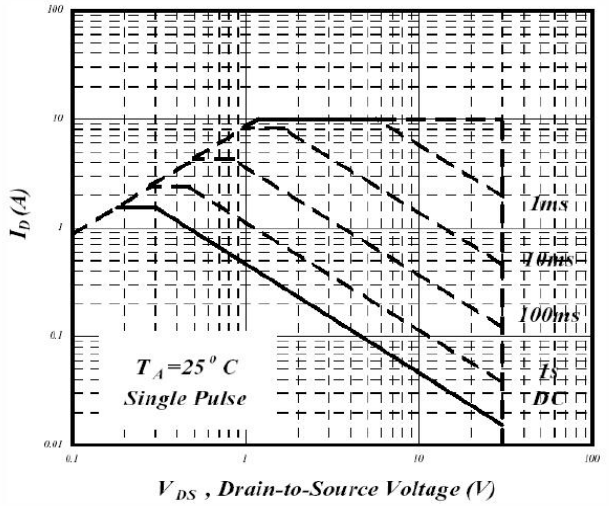


Fig 9. Maximum Safe Operating Area

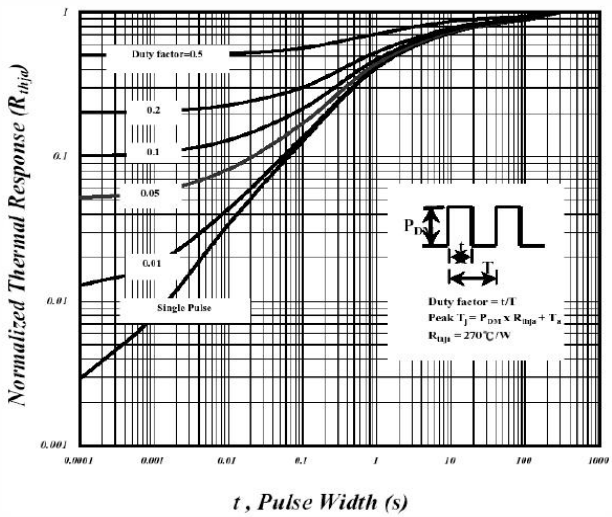


Fig 10. Effective Transient Thermal Impedance

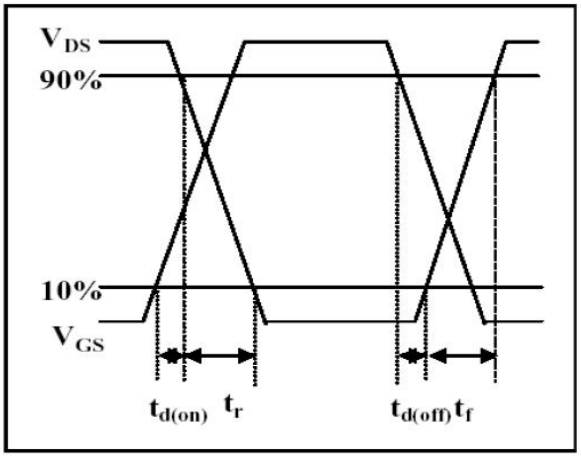


Fig 11. Switching Time Waveform

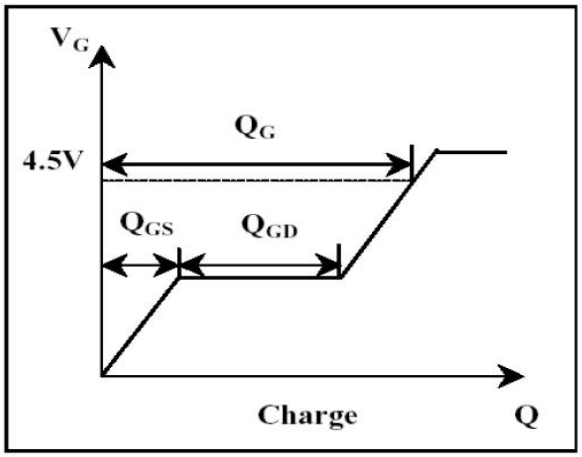


Fig 12. Gate Charge Waveform