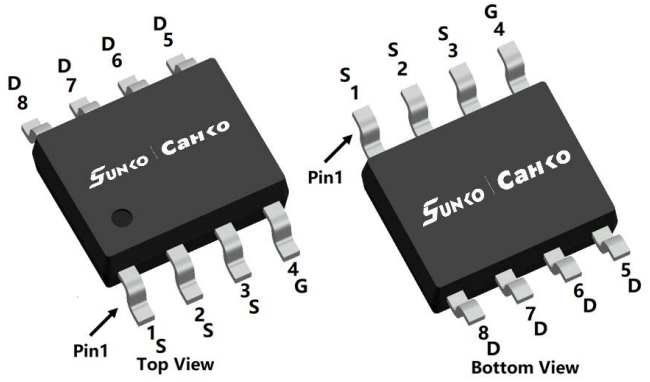
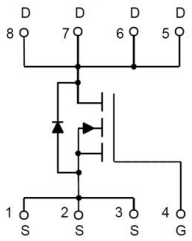
SCS05GP10A

P-Channel Enhancement Mode Field Effect Transistor



SOP-8



Product Summary

- V_{DS} -100V
- I_D -4.5A
- $R_{DS(ON)}$(at V_{GS}=-10V) ＜110 mohm
- $R_{DS(ON)}$(at V_{GS}=-4.5V) ＜120 mohm
- 100% EAS Tested
- 100% ▽V_{DS} Tested

General Description

- Split gate trench MOSFET technology
- High density cell design for low $R_{DS(ON)}$
- Low Crss(Typ.25pF)
- Moisture Sensitivity Level 3
- Epoxy Meets UL 94 V-0 Flammability Rating
- Halogen Free

Applications

- DC motor control
- power supplies

■ Absolute Maximum Ratings (T_A=25℃unless otherwise noted)

Parameter		Symbol	Limit	Unit
Drain-source Voltage		V_{DS}	-100	V
Gate-source Voltage		V_{GS}	±20	V
Drain Current	T_A=25℃	I_D	-4.5	A
	T_A=100℃		-2.85	
Pulsed Drain Current [A]		I_{DM}	-18	A
Avalanche energy [B]		E_{AS}	56	mJ
Total Power Dissipation	T_A=25℃	P_D	1.65	W
	T_A=100℃		0.65	
Junction and Storage Temperature Range		T_J ,T_{STG}	-55～+150	℃

■Thermal resistance

Parameter		Symbol	Typ	Max	Units
Thermal Resistance Junction-to-Ambient [C]	t≤10S	$R_{\theta JA}$	31	40	℃/W
Thermal Resistance Junction-to-Ambient [C]	Steady-State		59	75	
Thermal Resistance Junction-to-Lead	Steady-State	$R_{\theta JL}$	16	24	

■ Ordering Information (Example)

PREFERED P/N	PACKING CODE	Marking	MINIMUM PACKAGE(pcs)	INNER BOX QUANTITY(pcs)	OUTER CARTON QUANTITY(pcs)	DELIVERY MODE
SCS05GP10A	F2	Q05P10A	4000	8000	64000	13“ reel

■ Electrical Characteristics (T_J=25℃ unless otherwise noted)

Parameter	Symbol	Conditions		Min	Typ	Max	Units
Static Parameter							
Drain-Source Breakdown Voltage	BV_{DSS}	V_{GS}= 0V, I_D=-250μA		-100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-100V,V_{GS}=0V	T_J=25℃			-1	μA
			T_J=150℃			-100	
Gate-Body Leakage Current	I_{GSS}	V_{GS}= ±20V, V_{DS}=0V				±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}= V_{GS}, I_D=-250μA		-1.0	-1.8	-2.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}= -10V, I_D=-3A			83	110	mΩ
		V_{GS}= -4.5V, I_D=-2A			95	120	
Diode Forward Voltage	V_{SD}	I_S=-3A,V_{GS}=0V				-1.3	V
Maximum Body-Diode Continuous Current	I_S					-4.5	A
Dynamic Parameters							
Input Capacitance	C_{iss}	V_{DS}=-50V,V_{GS}=0V,f=1MHZ			1051		pF
Output Capacitance	C_{oss}				119		
Reverse Transfer Capacitance	C_{rss}				25		
Switching Parameters							
Total Gate Charge	$Q_{g(-10V)}$	V_{GS}=-10V,V_{DS}=-50V,I_D=-5A			20		nC
Total Gate Charge	$Q_{g(-4.5V)}$				9.7		
Gate-Source Charge	Q_{gs}				3.9		
Gate-Drain Charge	Q_{gd}				4.3		
Reverse Recovery Chrage	Q_{rr}	I_F=-5A, di/dt=100A/us			140		
Reverse Recovery Time	t_{rr}				80		ns
Turn-on Delay Time	$t_{D(on)}$	V_{GS}=-10V,V_{DD}=-50V,I_{DS}=-5A R_{GEN}=6Ω			10		
Turn-on Rise Time	t_r				30		
Turn-off Delay Time	$t_{D(off)}$				77		
Turn-off fall Time	t_f				81		

A. Repetitive rating; pulse width limited by max. junction temperature.

B. Pd is based on max. junction temperature, using ≤10s junction-ambient thermal resistance.

C. The value of $R_{\theta JA}$ is measured with the device mounted on 1in^2 FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C. The value in any given application depends on the user's specific board design.

■ Typical Performance Characteristics

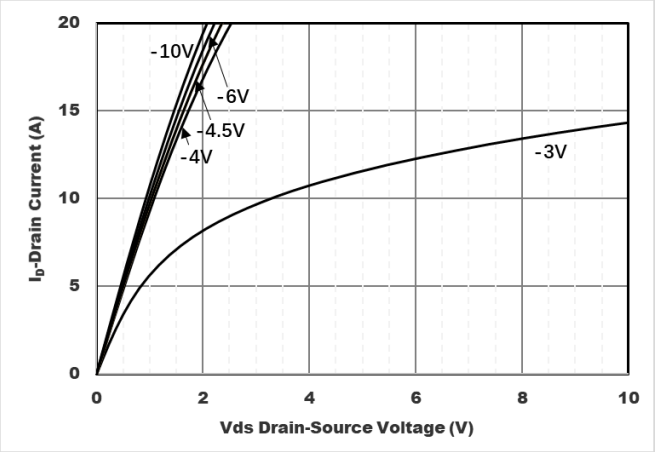


Figure1. Output Characteristics

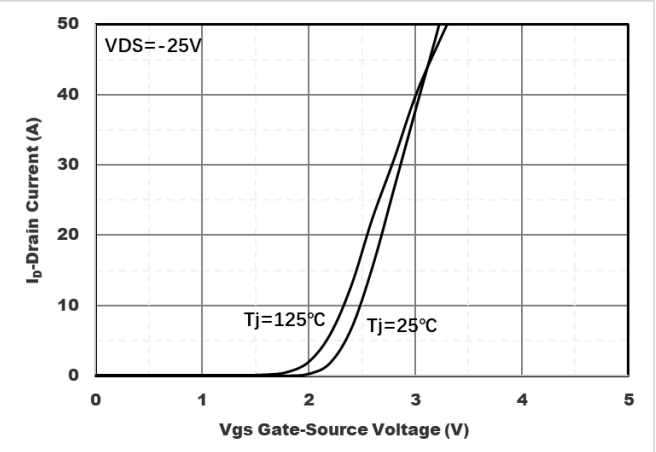


Figure2. Transfer Characteristics

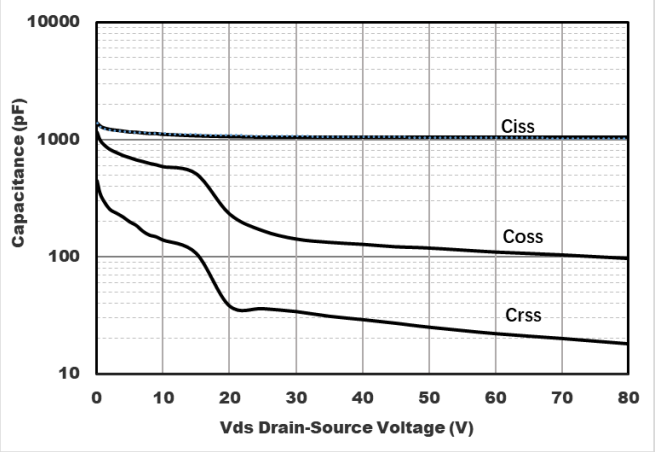


Figure3. Capacitance Characteristics

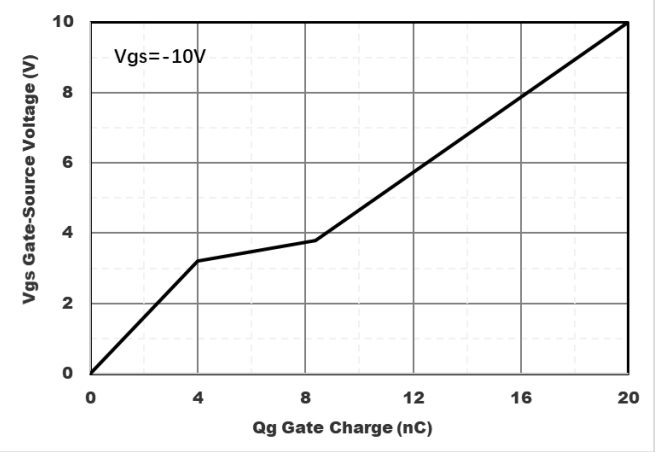


Figure4. Gate Charge

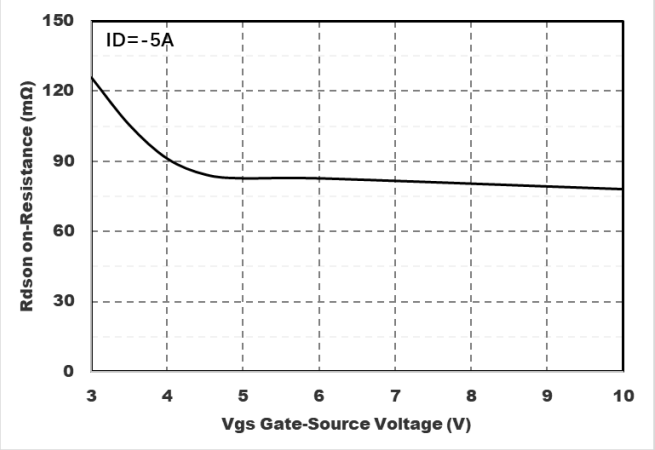


Figure5. : On-Resistance vs. Gate to Source Voltage

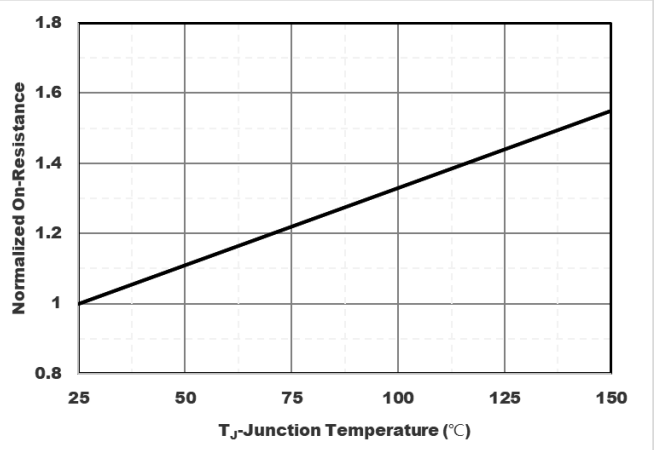


Figure6.Normalized On-Resistance

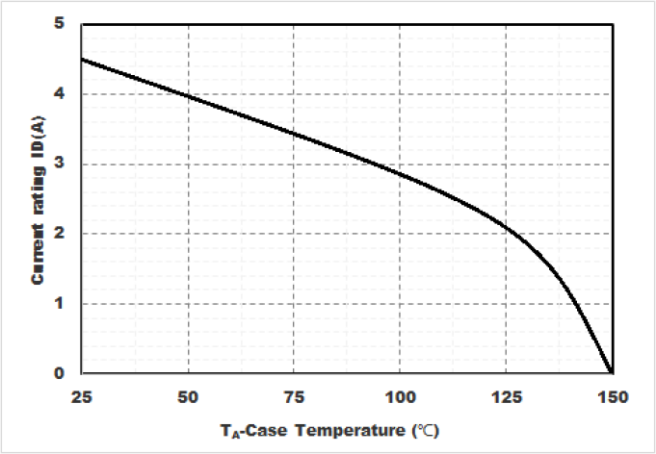


Figure7. Drain current

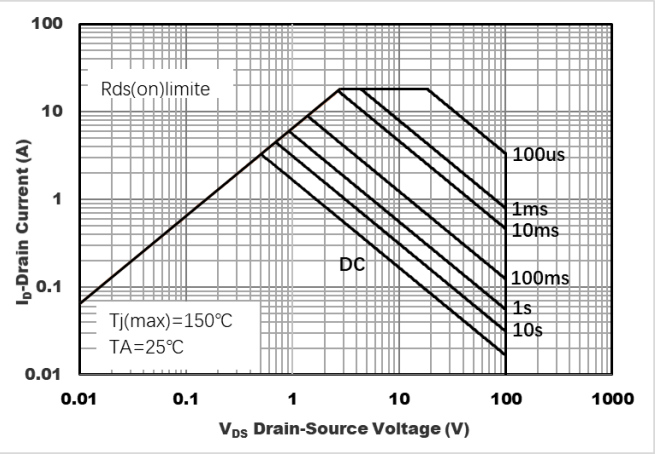


Figure8.Safe Operation Area

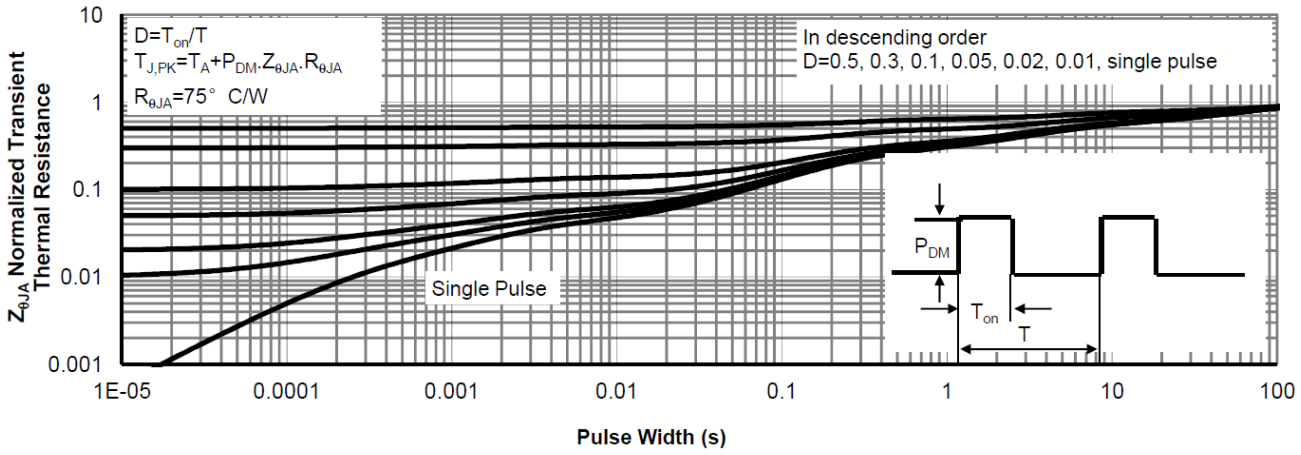
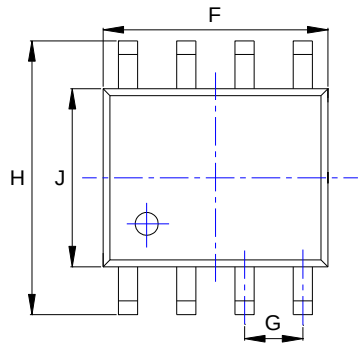
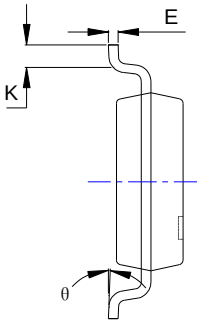


Figure9. Normalized Maximum Transient Thermal Impedance

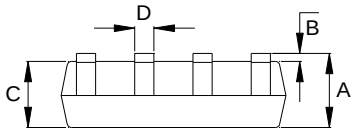
■ SOP-8 Package Information



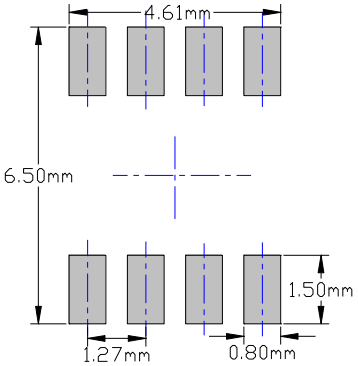
TOP VIEW



SIDE VIEW



SIDE VIEW



Suggested Solder Pad Layout

DIMENSIONS				
SYMBOL	INCHES		Millimeter	
	MIN.	MAX.	MIN.	MAX.
A	0.053	0.069	1.350	1.750
B	0.004	0.010	0.100	0.250
C	0.053	0.061	1.350	1.550
D	0.013	0.020	0.330	0.510
E	0.007	0.010	0.170	0.250
F	0.189	0.197	4.800	5.000
G	0.050BSC		1.270BSC	
H	0.228	0.244	5.800	6.200
J	0.150	0.157	3.800	4.000
K	0.016	0.050	0.400	1.270
θ	0°	8°	0°	8°

Note:
1.Controlling dimension:in millimeters.
2.General tolerance:+/-0.05mm.
3.The pad layout is for reference purposes only.

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