



# SCH2807

MOSFET : N-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

## General-Purpose Switching Device Applications

### Features

- Composite type with an N-channel silicon MOSFET (SCH1407) and a schottky barrier diode (SS05015) contained in one package facilitating high-density mounting.

#### [MOSFET]

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4V drive.

#### [SBD]

- Short reverse recovery time.
- Low forward voltage.

### Specifications

**Absolute Maximum Ratings** at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
[MOSFET]				
Drain-to-Source Voltage	V <sub>DSS</sub>		20	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±15	V
Drain Current (DC)	I <sub>D</sub>		1.2	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	4.8	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (900mm <sup>2</sup> ×0.8mm) 1unit	0.6	W
Channel Temperature	T <sub>ch</sub>		150	°C
Storage Temperature	T <sub>stg</sub>		-55 to +125	°C
[SBD]				
Repetitive Peak Reverse Voltage	V <sub>RRM</sub>		15	V
Nonrepetitive Peak Reverse Surge Voltage	V <sub>RSM</sub>		15	V
Average Output Current	I <sub>O</sub>		0.5	A
Surge Forward Current	I <sub>FSM</sub>	50Hz sine wave, 1 cycle	3	A
Junction Temperature	T <sub>J</sub>		-55 to +125	°C
Storage Temperature	T <sub>stg</sub>		-55 to +125	°C

Marking : QG

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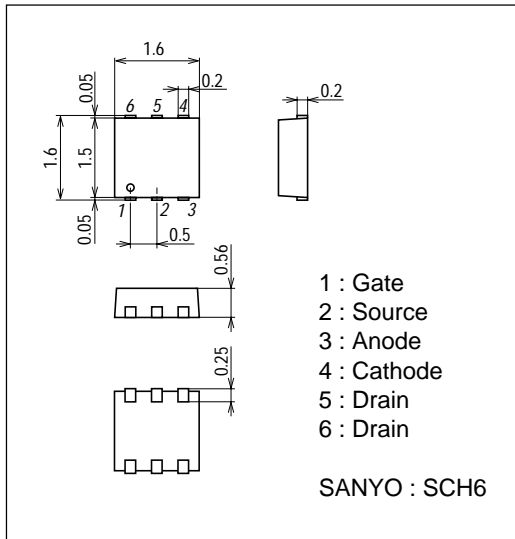
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1mA, V_{GS}=0$	20			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=20V, V_{GS}=0$			1	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 12V, V_{DS}=0$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=600mA$	480	800		mS
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=600mA, V_{GS}=10V$		240	320	$m\Omega$
	$R_{DS(on)2}$	$I_D=300mA, V_{GS}=4.5V$		480	675	$m\Omega$
	$R_{DS(on)3}$	$I_D=300mA, V_{GS}=4V$		590	830	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=10V, f=1MHz$		38		pF
Output Capacitance	$C_{oss}$	$V_{DS}=10V, f=1MHz$		13.5		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=10V, f=1MHz$		9.2		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		5.0		ns
Rise Time	$t_r$	See specified Test Circuit.		16.0		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		9.4		ns
Fall Time	$t_f$	See specified Test Circuit.		3.4		ns
Total Gate Charge	$Q_g$	$V_{DS}=10V, V_{GS}=10V, I_D=1.2A$		2.1		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=10V, V_{GS}=10V, I_D=1.2A$		0.6		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=10V, V_{GS}=10V, I_D=1.2A$		0.2		nC
Diode Forward Voltage	$V_{SD}$	$I_S=1.2A, V_{GS}=0$		0.92	1.2	V
[SBD]						
Reverse Voltage	$V_R$	$I_R=0.5mA$	15			V
Forward Voltage	$V_F$	$I_F=0.5A$		0.4	0.46	V
Reverse Current	$I_R$	$V_R=6V$			90	$\mu A$
Interterminal Capacitance	$C$	$V_R=10V, f=1MHz$		13		pF
Reverse Recovery Time	$t_{rr}$	$I_F=I_R=100mA$ , See specified Test Circuit.			10	ns

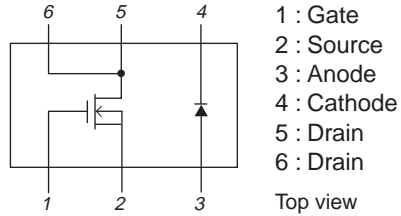
## Package Dimensions

unit : mm

2230A



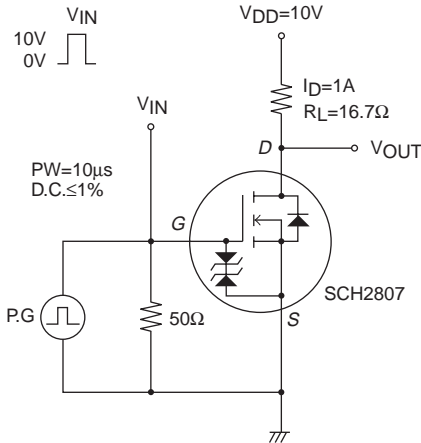
## Electrical Connection



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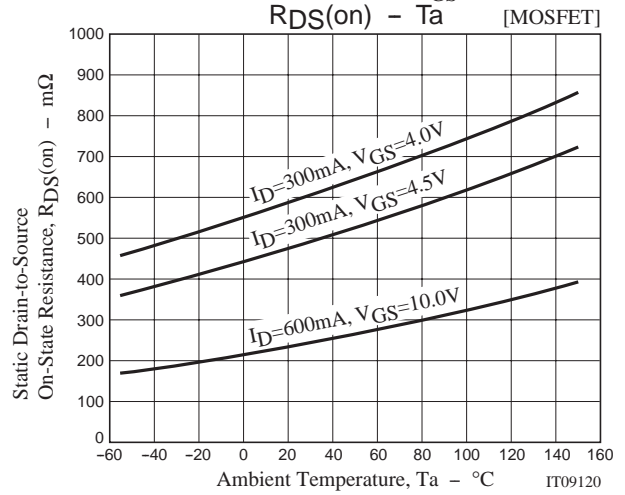
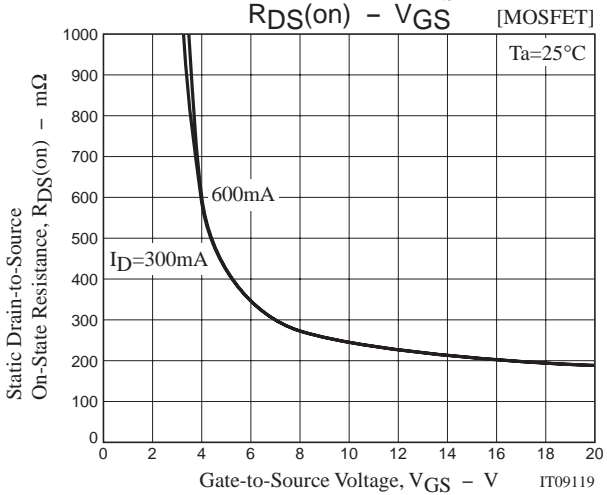
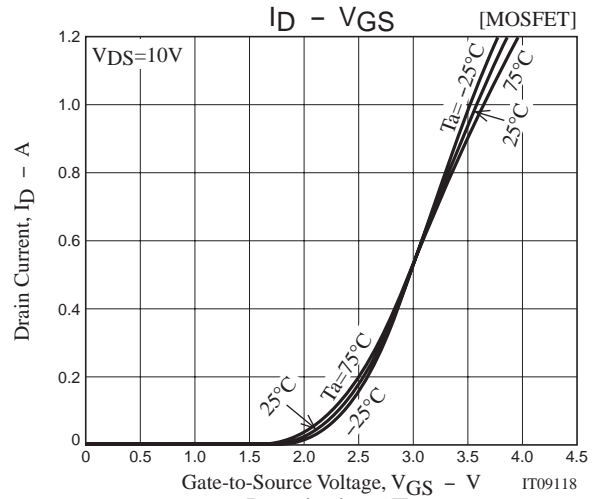
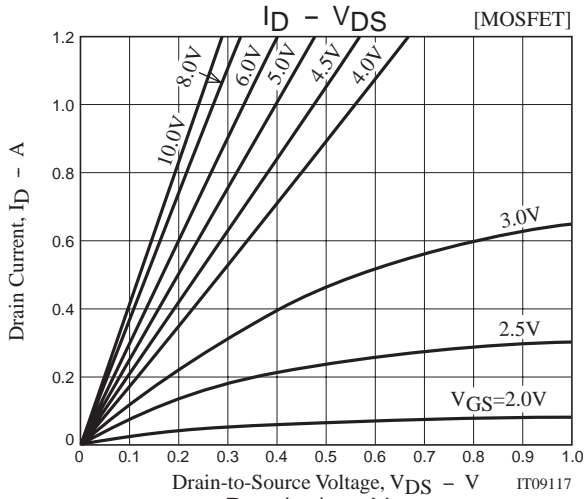
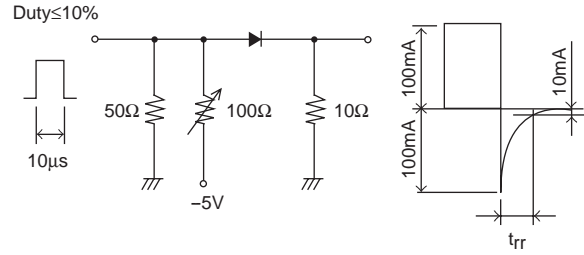
## Switching Time Test Circuit

[MOSFET]

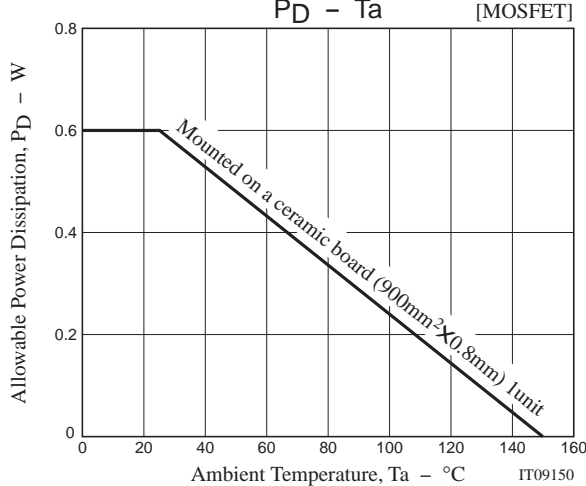
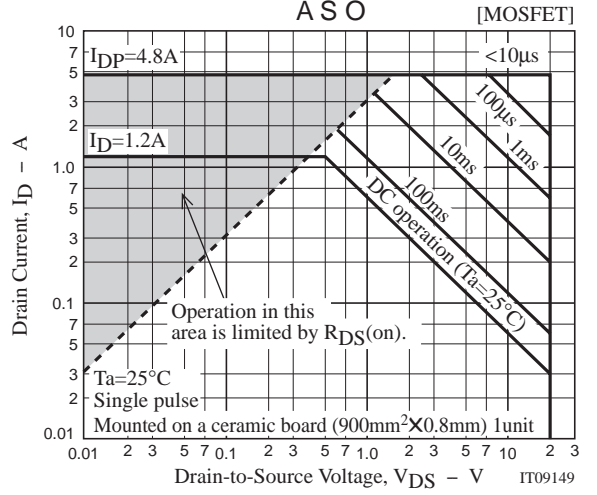
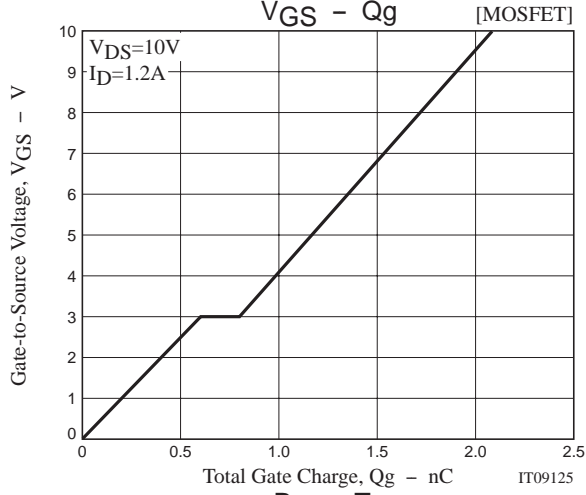
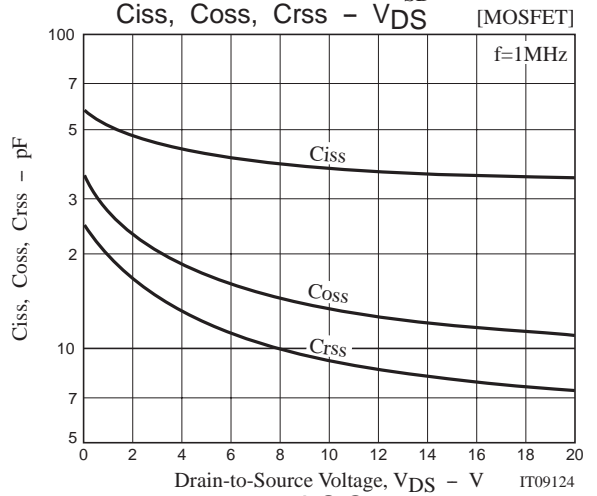
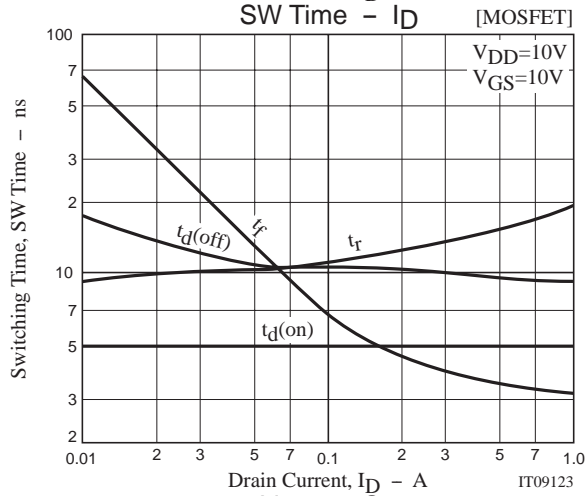
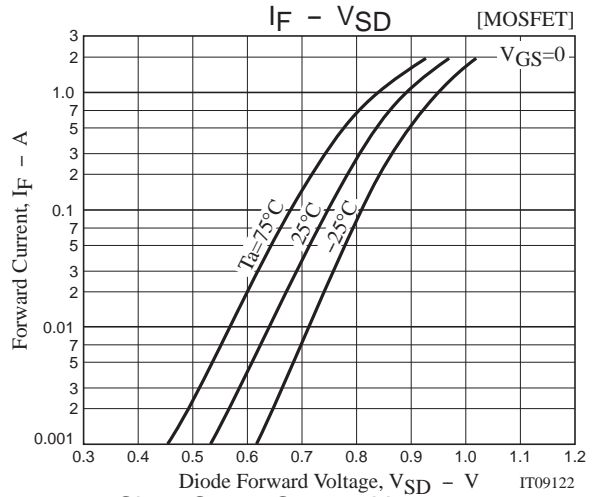
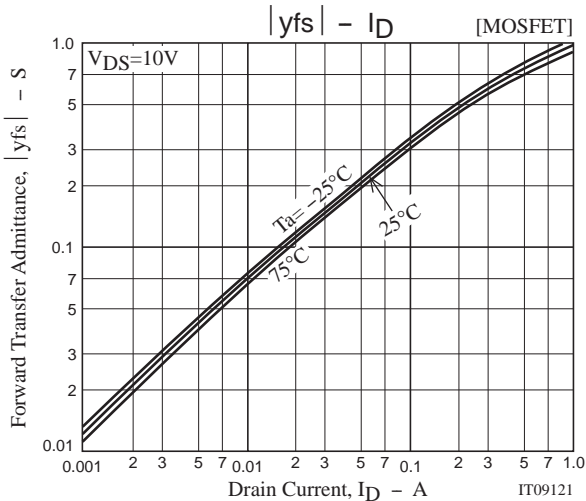


## $t_{rr}$ Test Circuit

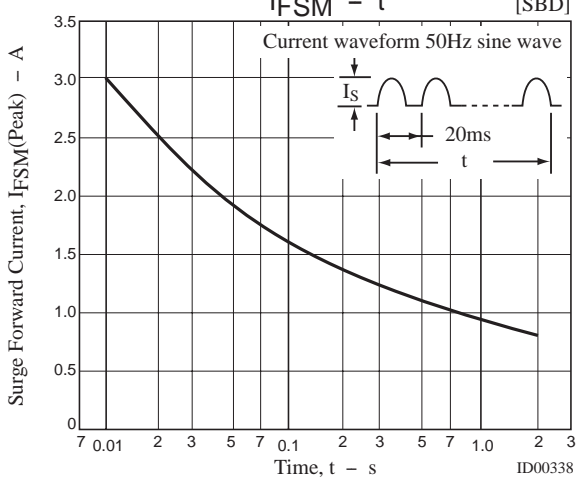
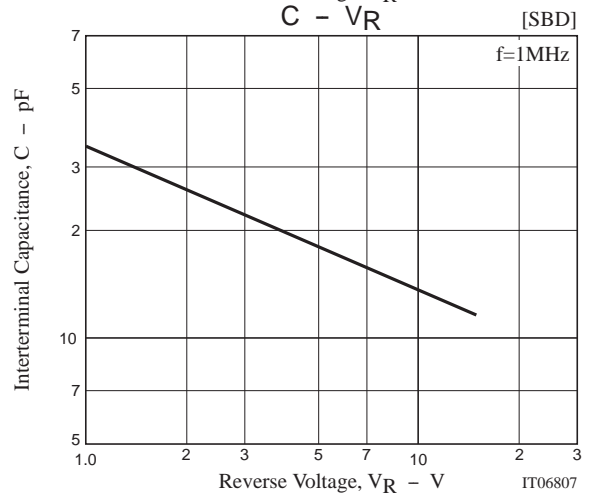
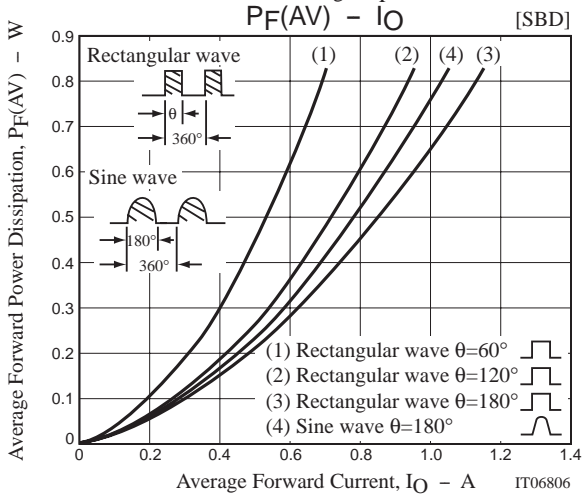
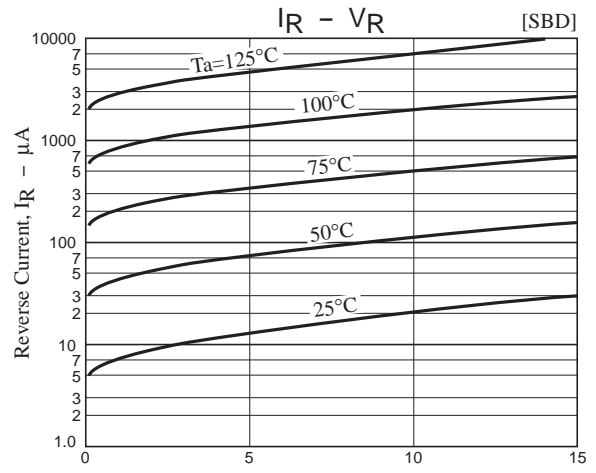
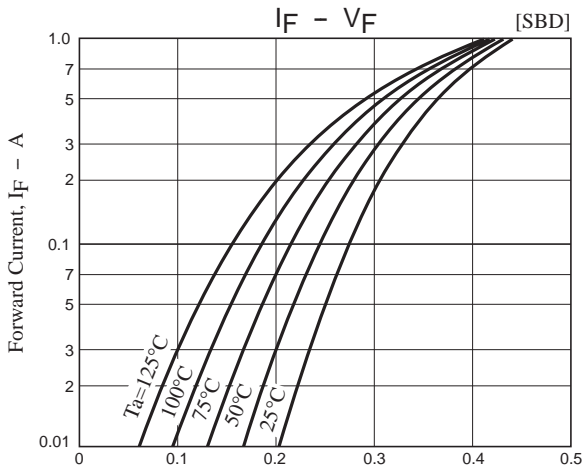
[SBD]



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Note on usage : Since the SCH2807 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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