



# SCH2830 — General-Purpose Switching Device Applications

MOSFET : P-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

## Features

- Composite type with a P-channel silicon MOSFET and a schottky barrier diode contained in one package facilitating high-density mounting.
- [MOSFET]
  - Low ON-resistance.
  - Ultrahigh-speed switching.
  - 1.8V 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>		±10	V
Drain Current (DC)	I <sub>D</sub>		-1	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	-4	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>		30	V
Nonrepetitive Peak Reverse Surge Voltage	V <sub>RSM</sub>		30	V
Average Output Current	I <sub>O</sub>	Mounted on a ceramic board (900mm <sup>2</sup> ×0.8mm)	0.7	A
		Mounted in Cu-foiled area of 0.72mm <sup>2</sup> ×0.03mm on glass epoxy board	0.5	A

Marking : XF

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62707PE TI IM TC-0000761 No. A0861-1/6

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Parameter	Symbol	Conditions	Ratings	Unit
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

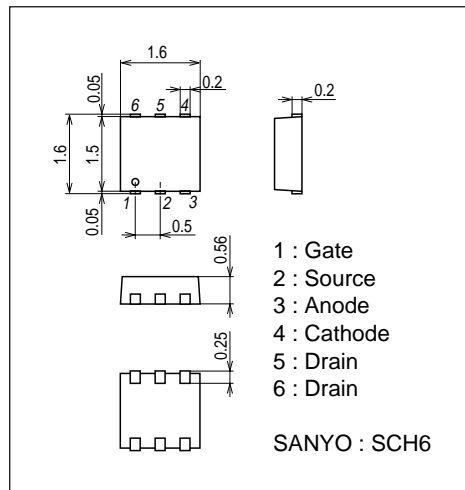
## Electrical Characteristics at T<sub>a</sub>=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	I <sub>D</sub> =-1mA, V <sub>GS</sub> =0V	-20			V
Zero-Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V			-1	μA
Gate-to-Source Leakage Current	I <sub>GSS</sub>	V <sub>GS</sub> =±8V, V <sub>DS</sub> =0V			±10	μA
Cutoff Voltage	V <sub>GS(off)</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-1mA	-0.4		-1.4	V
Forward Transfer Admittance	y <sub>fs</sub>	V <sub>DS</sub> =-10V, I <sub>D</sub> =-0.5A	0.72	1.2		S
Static Drain-to-Source On-State Resistance	R <sub>DS(on)1</sub>	I <sub>D</sub> =-0.5A, V <sub>GS</sub> =-4V		380	500	mΩ
	R <sub>DS(on)2</sub>	I <sub>D</sub> =-0.3A, V <sub>GS</sub> =-2.5V		540	760	mΩ
	R <sub>DS(on)3</sub>	I <sub>D</sub> =-0.1A, V <sub>GS</sub> =-1.8V		670	1000	mΩ
Input Capacitance	C <sub>iss</sub>	V <sub>DS</sub> =-10V, f=1MHz		115		pF
Output Capacitance	C <sub>oss</sub>	V <sub>DS</sub> =-10V, f=1MHz		23		pF
Reverse Transfer Capacitance	C <sub>rss</sub>	V <sub>DS</sub> =-10V, f=1MHz		15		pF
Turn-ON Delay Time	t <sub>d(on)</sub>	See specified Test Circuit.		8		ns
Rise Time	t <sub>r</sub>	See specified Test Circuit.		6		ns
Turn-OFF Delay Time	t <sub>d(off)</sub>	See specified Test Circuit.		15		ns
Fall Time	t <sub>f</sub>	See specified Test Circuit.		7		ns
Total Gate Charge	Q <sub>g</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4V, I <sub>D</sub> =-1A		1.5		nC
Gate-to-Source Charge	Q <sub>gs</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4V, I <sub>D</sub> =-1A		0.4		nC
Gate-to-Drain "Miller" Charge	Q <sub>gd</sub>	V <sub>DS</sub> =-10V, V <sub>GS</sub> =-4V, I <sub>D</sub> =-1A		0.3		nC
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-1A, V <sub>GS</sub> =0V		-0.89	-1.2	V
[SBD]						
Reverse Voltage	V <sub>R</sub>	I <sub>R</sub> =0.5mA	30			V
Forward Voltage	V <sub>F</sub>	I <sub>F</sub> =0.5A		0.42	0.48	V
Reverse Current	I <sub>R</sub>	V <sub>R</sub> =15V			120	μA
Interterminal Capacitance	C	V <sub>R</sub> =10V, f=1MHz		13		pF
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> =I <sub>R</sub> =100mA, See specified Test Circuit.			10	ns

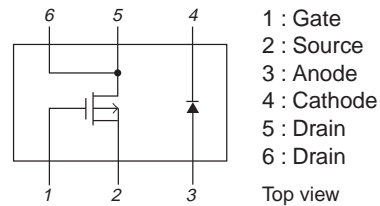
## Package Dimensions

unit : mm (typ)

7028-003



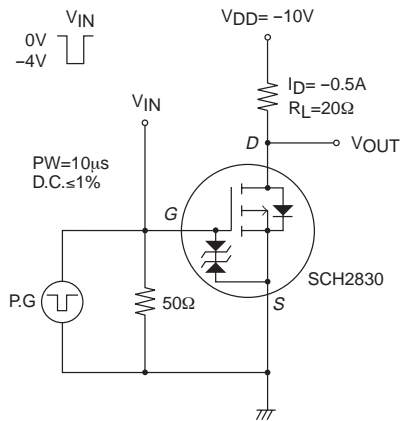
## Electrical Connection



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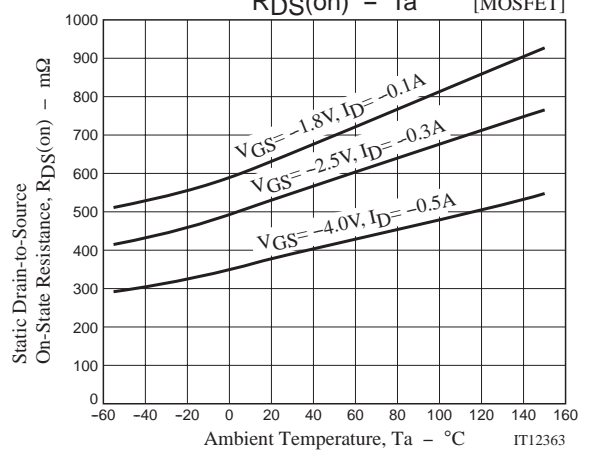
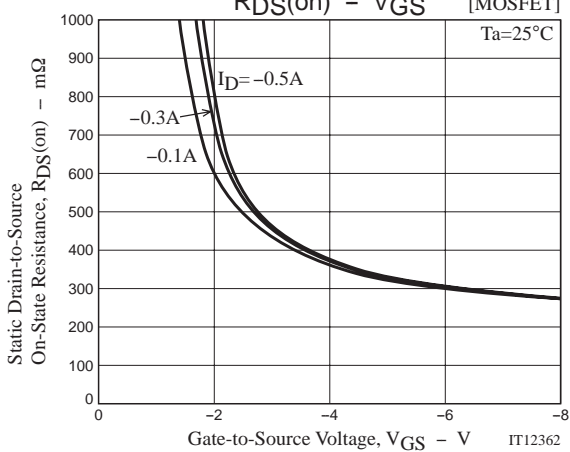
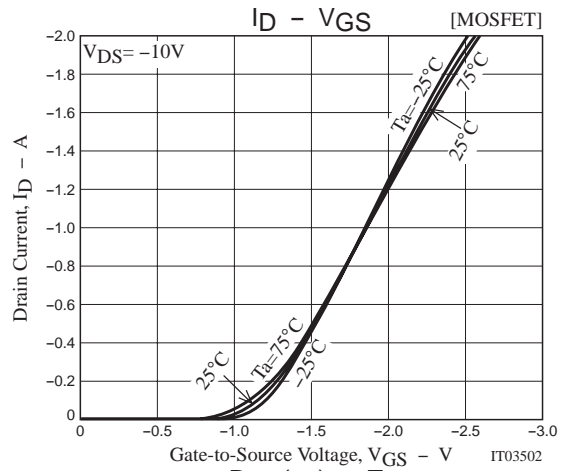
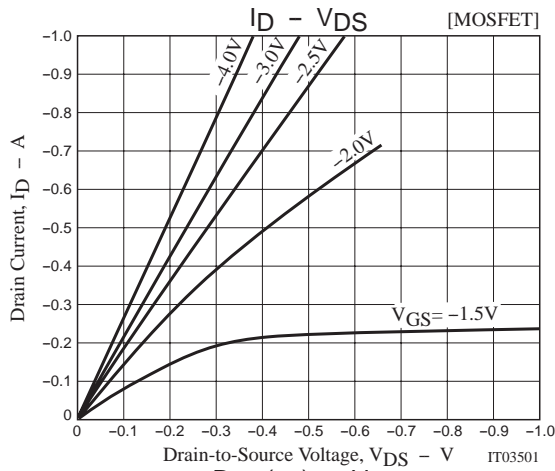
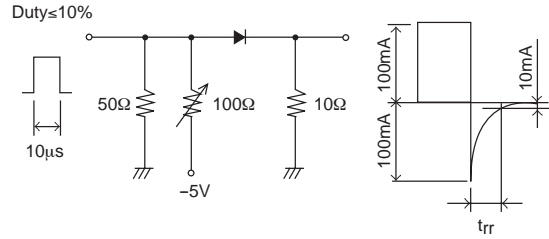
## Switching Time Test Circuit

[MOSFET]

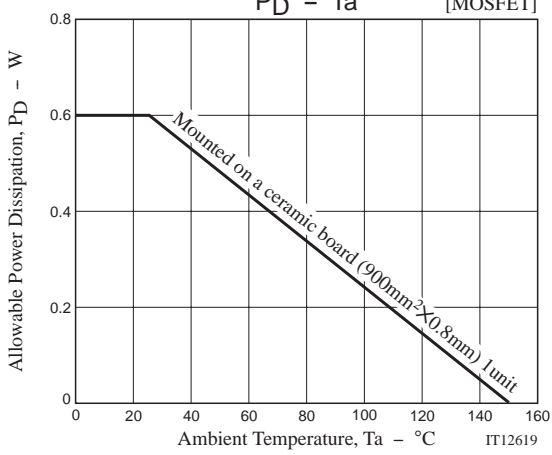
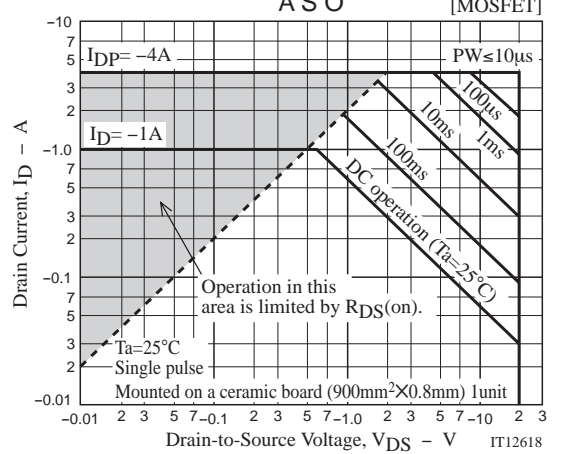
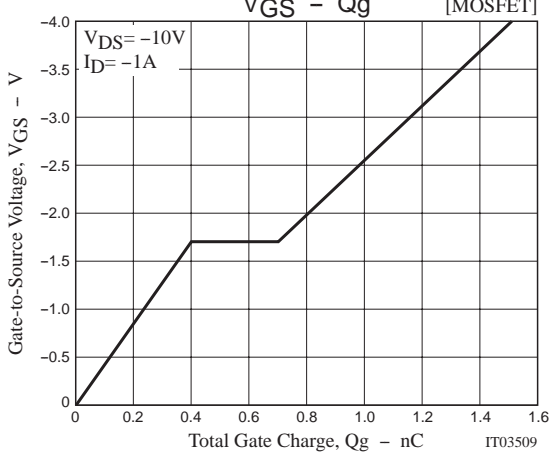
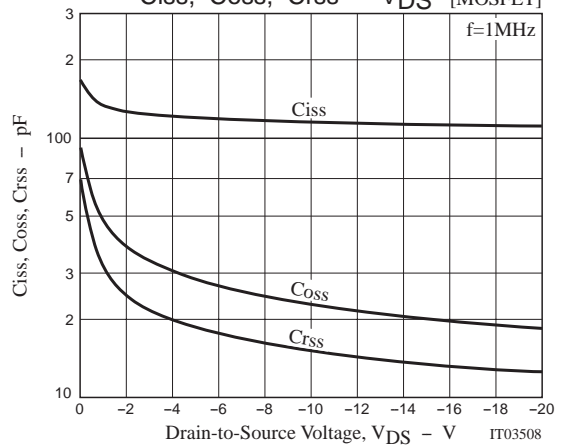
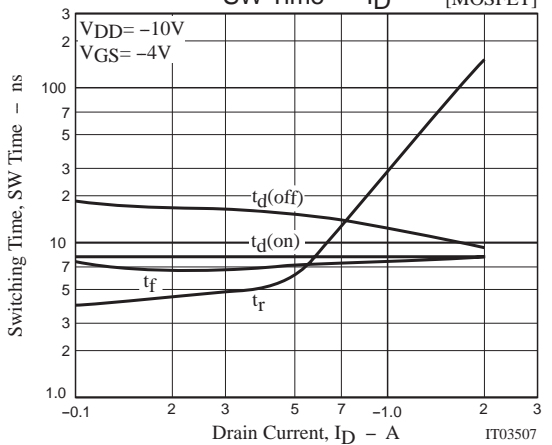
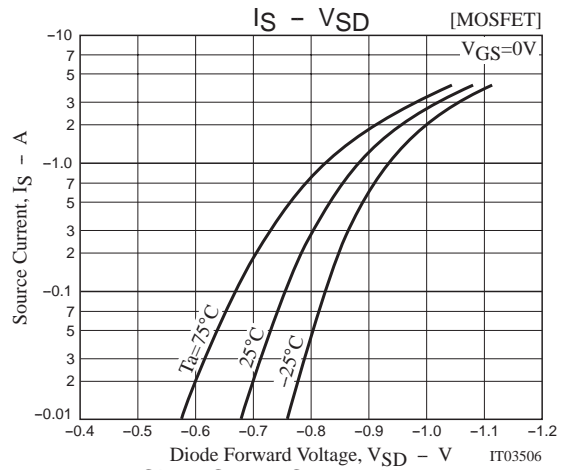
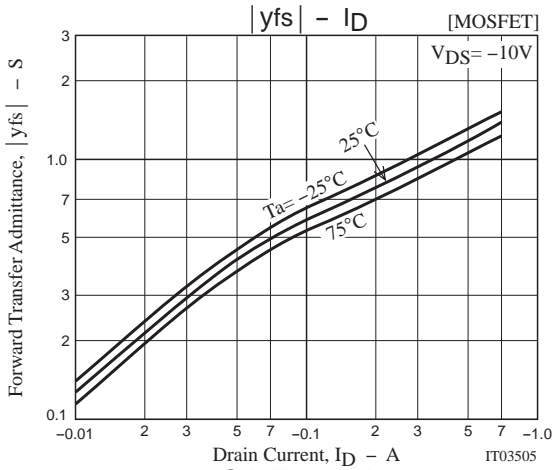


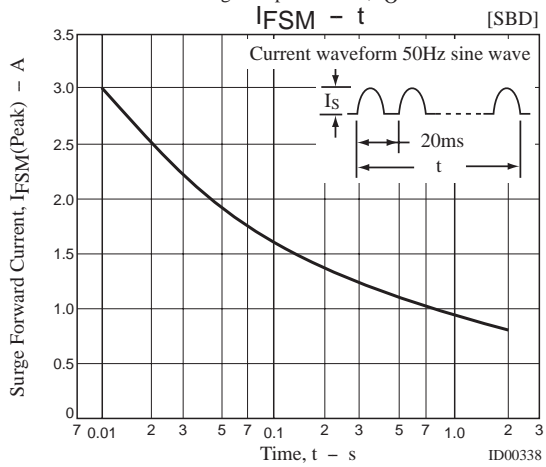
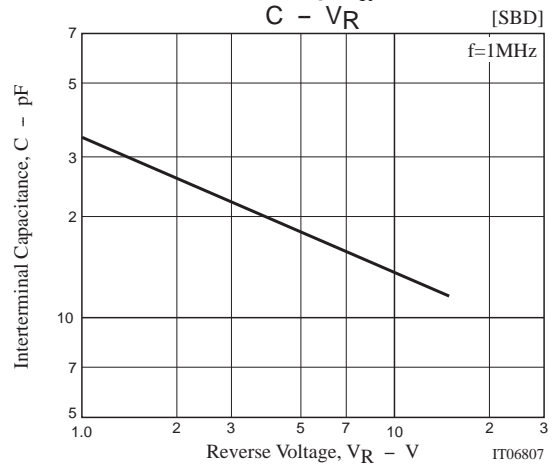
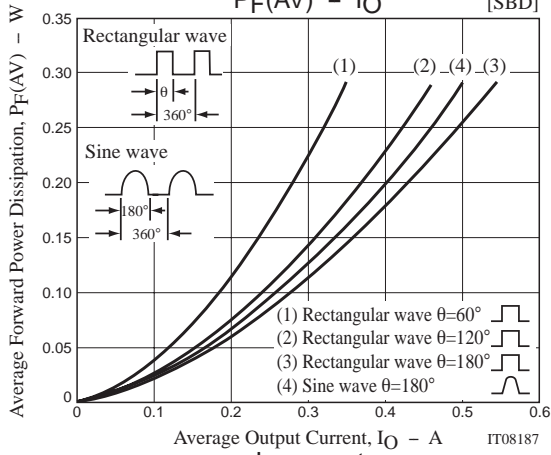
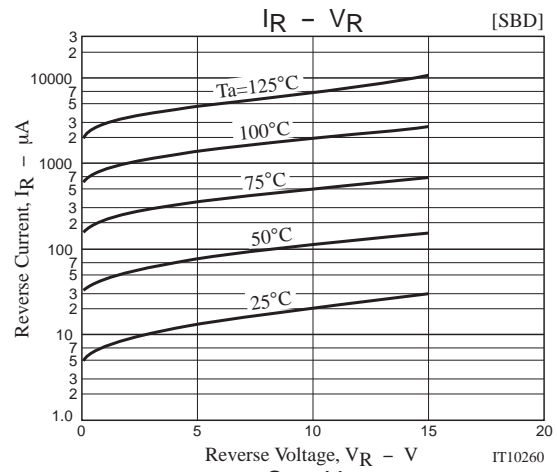
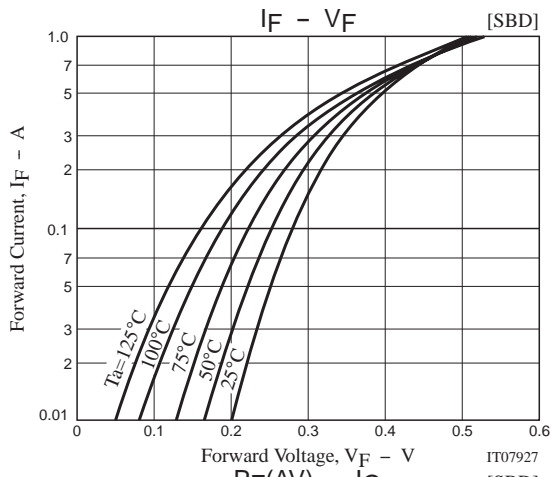
## t<sub>rr</sub> Test Circuit

[SBD]



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Note on usage : Since the SCH2830 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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