



SANYO Semiconductors

## DATA SHEET

# 2SK3815

N-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- Low ON-resistance.
- Ultrahigh-speed switching.
- 4V drive.
- Motor drive, DC / DC converter.
- Avalanche resistance guarantee.

### Specifications

**Absolute Maximum Ratings** at  $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		60	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		23	A
Drain Current (Pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	92	A
Allowable Power Dissipation	$P_D$		1.65	W
		$T_c=25^\circ\text{C}$	40	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$
Avalanche Energy (Single Pulse) *1	$E_{AS}$		19.8	mJ
Avalanche Current *2	$I_{AV}$		23	A

Note : \*1  $V_{DD}=20\text{V}$ ,  $L=50\mu\text{H}$ ,  $I_{AV}=23\text{A}$

\*2  $L \leq 50\mu\text{H}$ , single pulse

Marking : K3815

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**SANYO Semiconductor Co., Ltd.**

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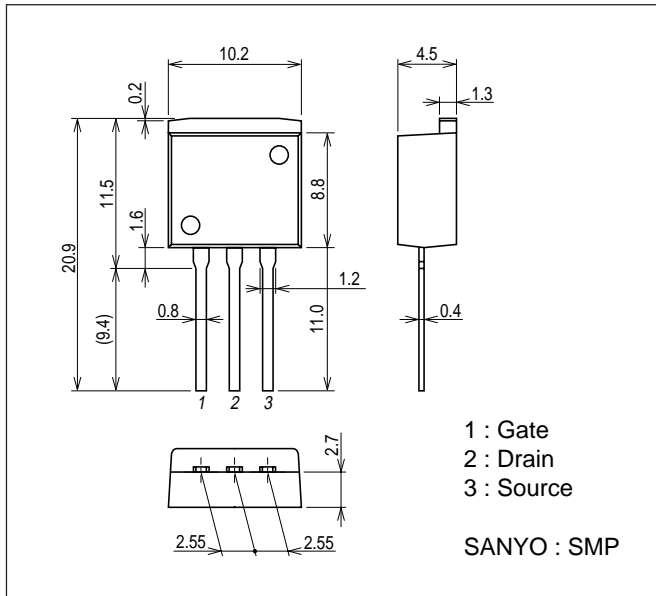
# 2SK3815

## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=1mA, V_{GS}=0V$	60			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=60V, V_{GS}=0V$			1	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16V, V_{DS}=0V$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	1.2		2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=12A$	9	15		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=12A, V_{GS}=10V$		42	55	$m\Omega$
	$R_{DS(on)2}$	$I_D=12A, V_{GS}=4V$		60	85	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=20V, f=1MHz$		775		pF
Output Capacitance	$C_{oss}$	$V_{DS}=20V, f=1MHz$		125		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=20V, f=1MHz$		105		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		11		ns
Rise Time	$t_r$	See specified Test Circuit.		85		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		72		ns
Fall Time	$t_f$	See specified Test Circuit.		78		ns
Total Gate Charge	$Q_g$	$V_{DS}=30V, V_{GS}=10V, I_D=23A$		19		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=30V, V_{GS}=10V, I_D=23A$		2.5		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=30V, V_{GS}=10V, I_D=23A$		4.1		nC
Diode Forward Voltage	$V_{SD}$	$I_S=23A, V_{GS}=0V$		1.04	1.5	V

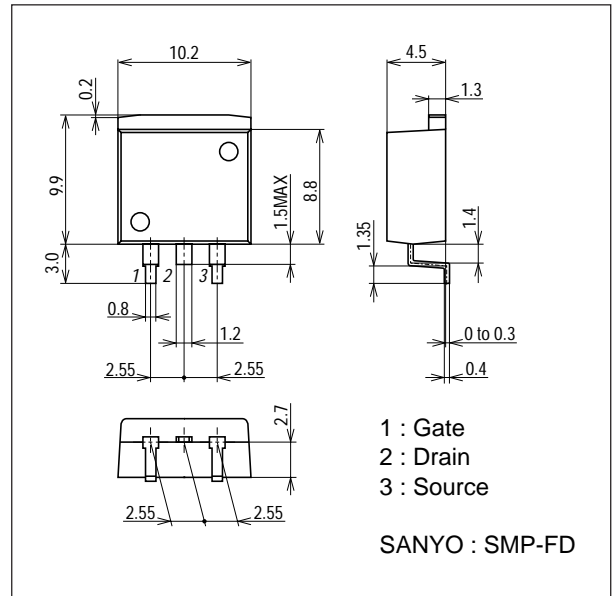
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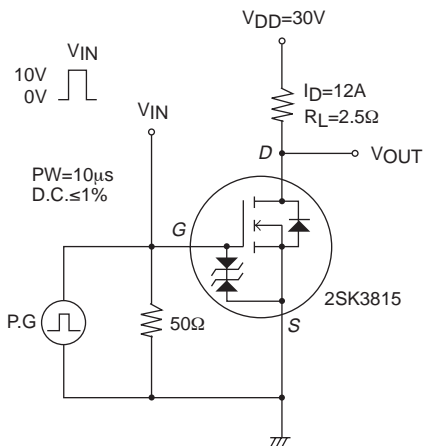


### Package Dimensions

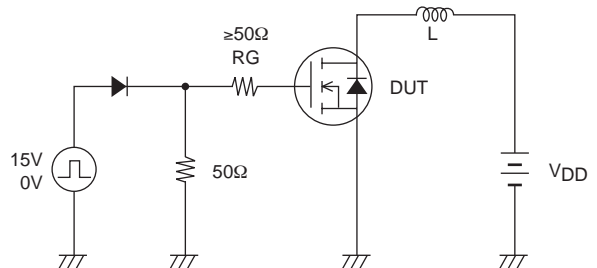
unit : mm (typ)  
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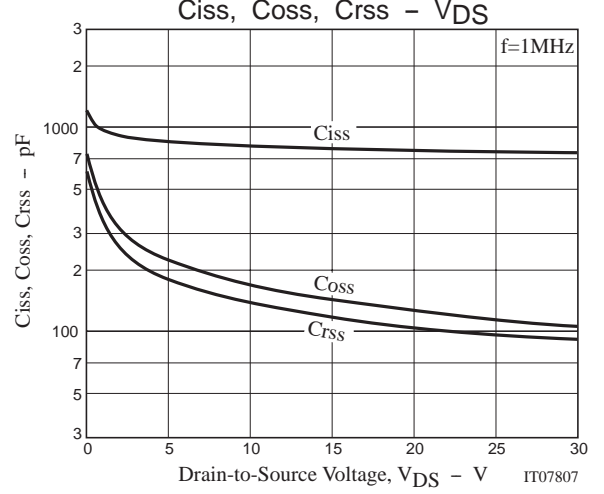
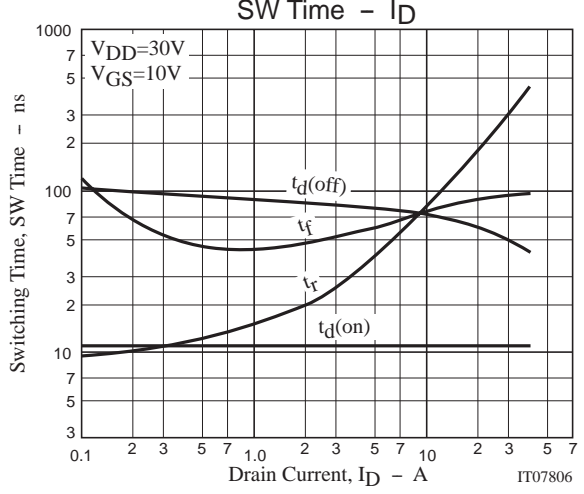
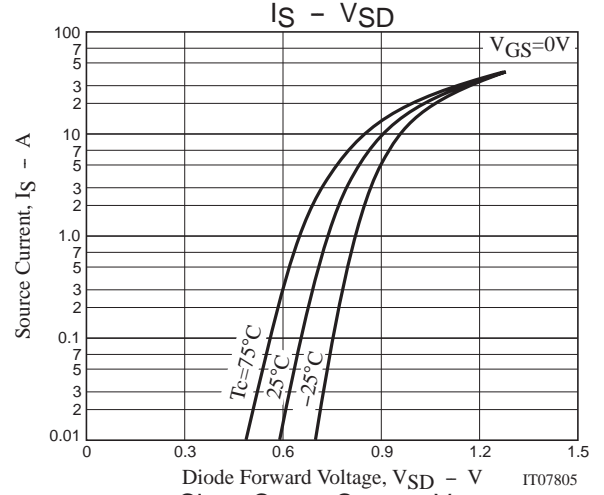
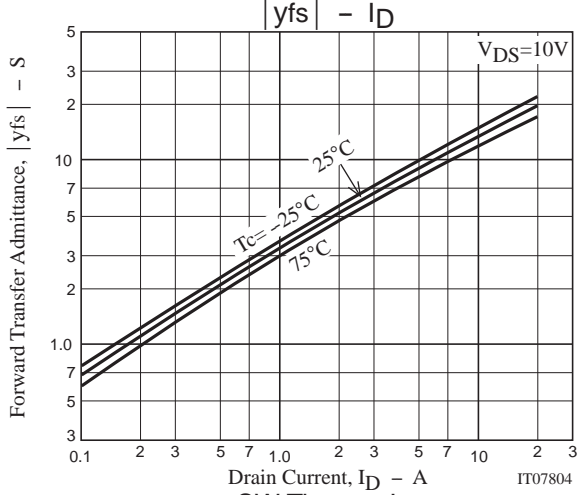
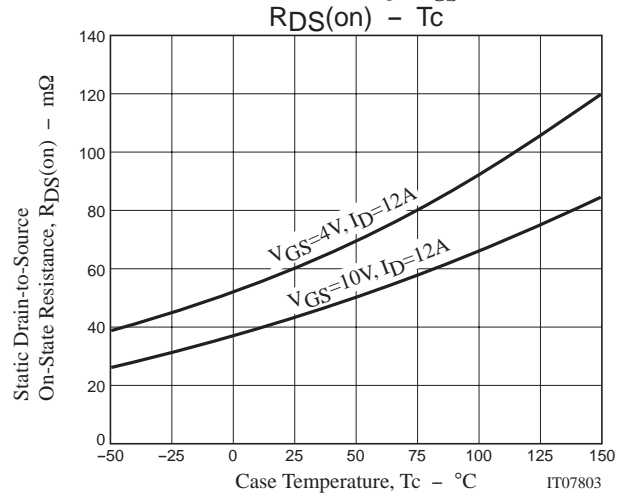
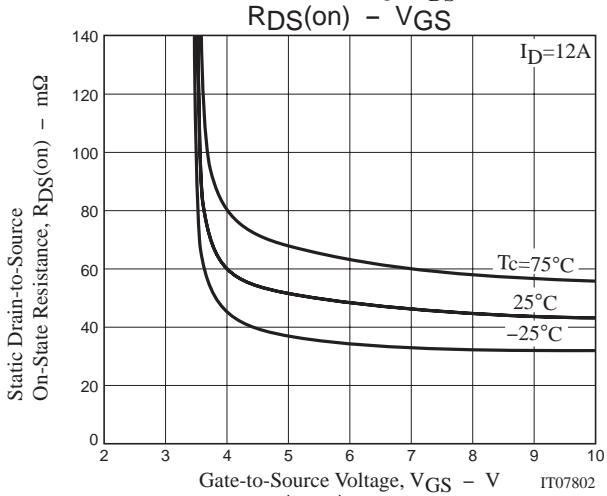
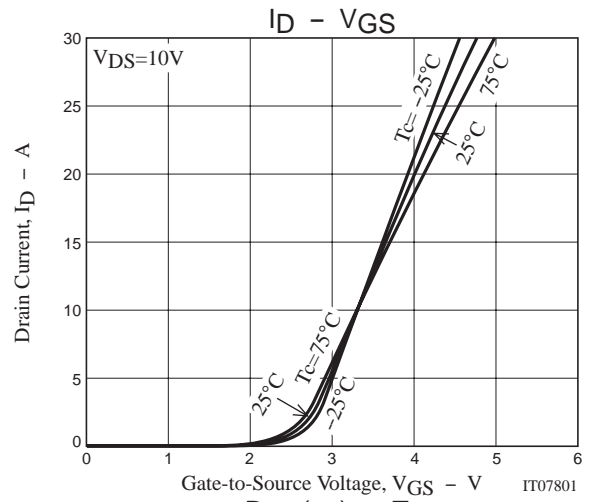
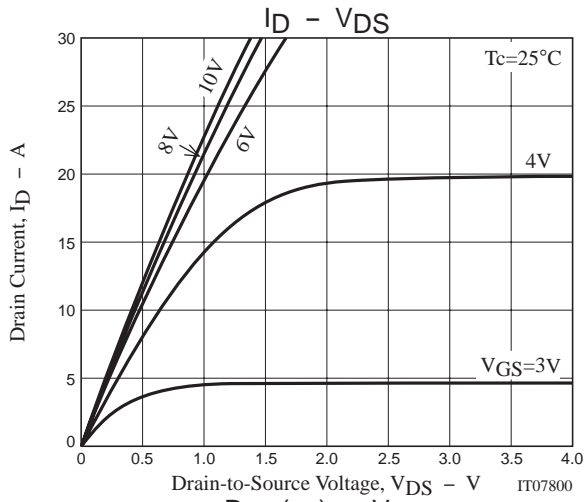
### Switching Time Test Circuit

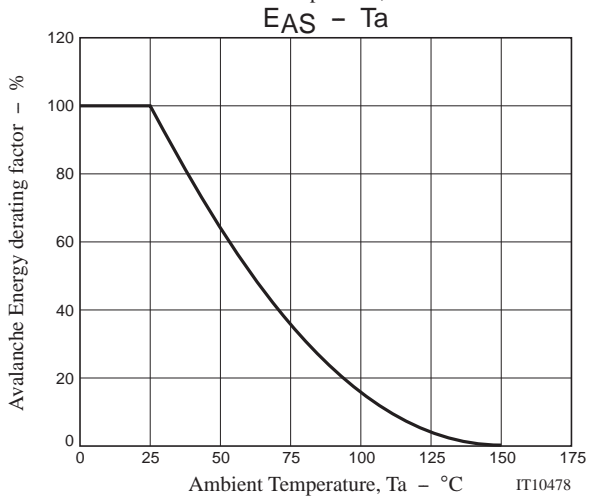
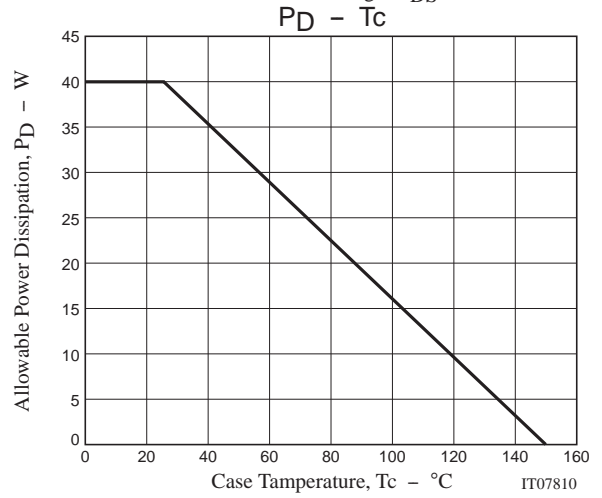
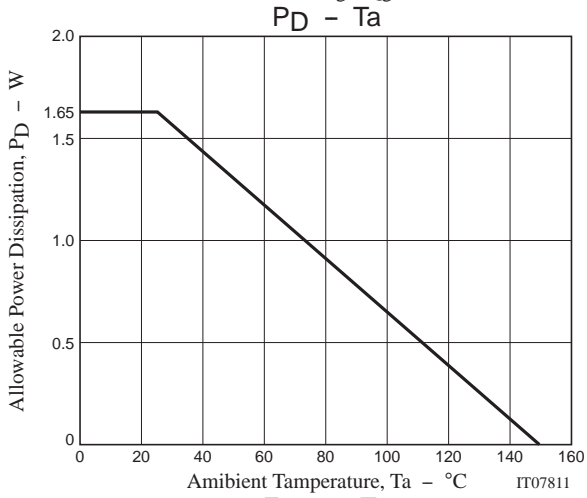
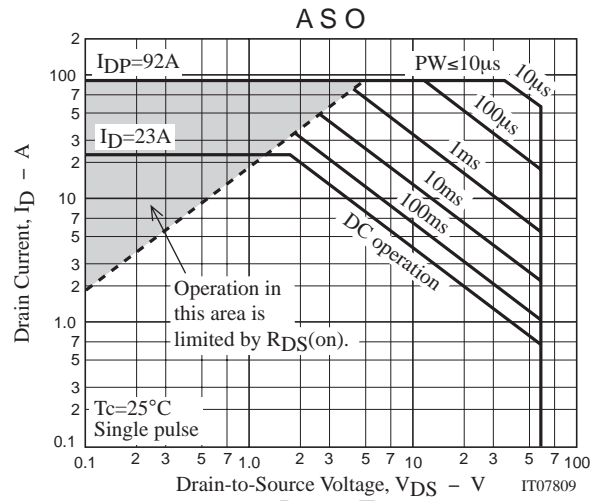
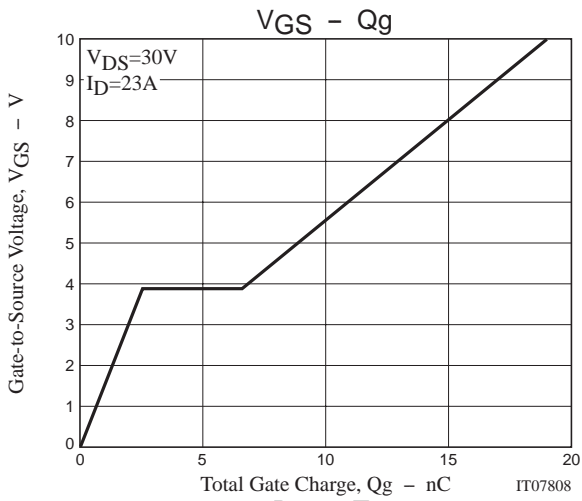


### Unclamped Inductive Test Circuit



# 2SK3815





Note on usage : Since the 2SK3815 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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