



SANYO Semiconductors

## DATA SHEET

VEC2815

MOSFET : P-Channel Silicon MOSFET

SBD : Schottky Barrier Diode

## General-Purpose Switching Device Applications

### Features

- DC/DC converter.
- 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.
  - 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>		-30	V
Gate-to-Source Voltage	V <sub>GSS</sub>		±20	V
Drain Current (DC)	I <sub>D</sub>		-3	A
Drain Current (Pulse)	I <sub>DP</sub>	PW≤10μs, duty cycle≤1%	-12	A
Allowable Power Dissipation	P <sub>D</sub>	Mounted on a ceramic board (900mm <sup>2</sup> ×0.8mm) 1unit	0.9	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>R</sub> RM		30	V
Nonrepetitive Peak Reverse Surge Voltage	V <sub>R</sub> SM		30	V
Average Output Current	I <sub>O</sub>		3	A
Surge Forward Current	I <sub>FSM</sub>	50Hz sine wave, 1 cycle	20	A
Junction Temperature	T <sub>J</sub>		-55 to +125	°C
Storage Temperature	T <sub>stg</sub>		-55 to +125	°C

Marking : CL

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# VEC2815

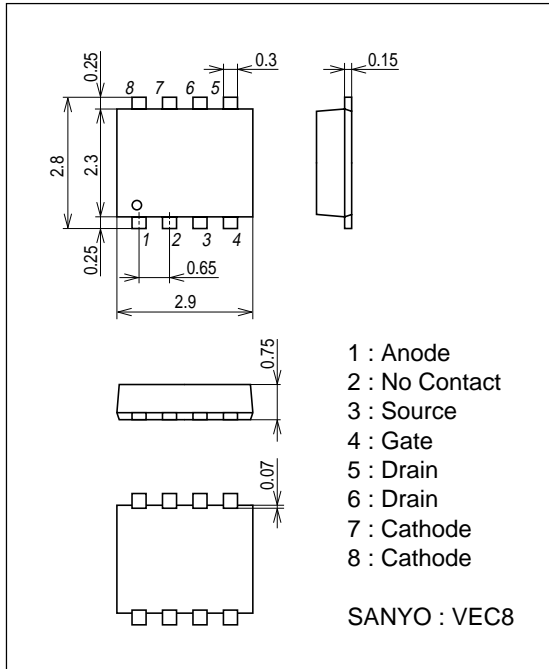
## Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
[MOSFET]						
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1mA, V_{GS}=0V$	-30			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-30V, V_{GS}=0V$			-1	$\mu A$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16V, V_{DS}=0V$			$\pm 10$	$\mu A$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10V, I_D=-1mA$	-1.0		-2.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10V, I_D=-1.5A$	2.0	3.4		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-1.5A, V_{GS}=-10V$		65	86	$m\Omega$
	$R_{DS(on)2}$	$I_D=-0.7A, V_{GS}=-4V$		117	168	$m\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=-10V, f=1MHz$		510		pF
Output Capacitance	$C_{oss}$	$V_{DS}=-10V, f=1MHz$		115		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=-10V, f=1MHz$		78		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit.		11		ns
Rise Time	$t_r$	See specified Test Circuit.		17		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit.		53		ns
Fall Time	$t_f$	See specified Test Circuit.		35		ns
Total Gate Charge	$Q_g$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-3A$		11		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-3A$		2.4		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=-10V, V_{GS}=-10V, I_D=-3A$		1.7		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-3A, V_{GS}=0V$		-0.87	-1.2	V
[SBD]						
Reverse Voltage	$V_R$	$I_R=2mA$	30			V
Forward Voltage	$V_F$	$I_F=3A$		0.37	0.42	V
Reverse Current	$I_R$	$V_R=15V$			1.4	mA
Interterminal Capacitance	$C$	$V_R=10V, f=1MHz$		90		pF
Reverse Recovery Time	$t_{rr}$	$I_F=I_R=100mA$ , See specified Test Circuit.			20	ns

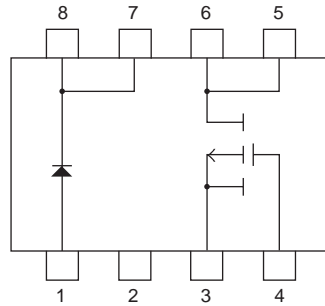
## Package Dimensions

unit : mm (typ)

7012-004



## Electrical Connection



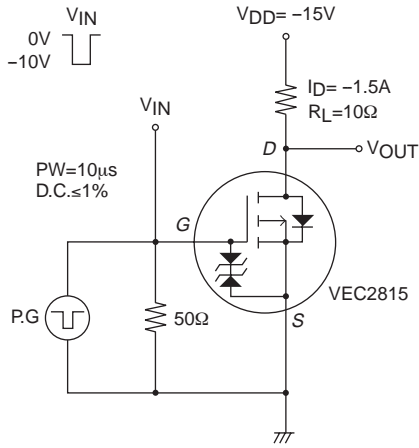
- 1 : Anode
- 2 : No Contact
- 3 : Source
- 4 : Gate
- 5 : Drain
- 6 : Drain
- 7 : Cathode
- 8 : Cathode

Top view

# VEC2815

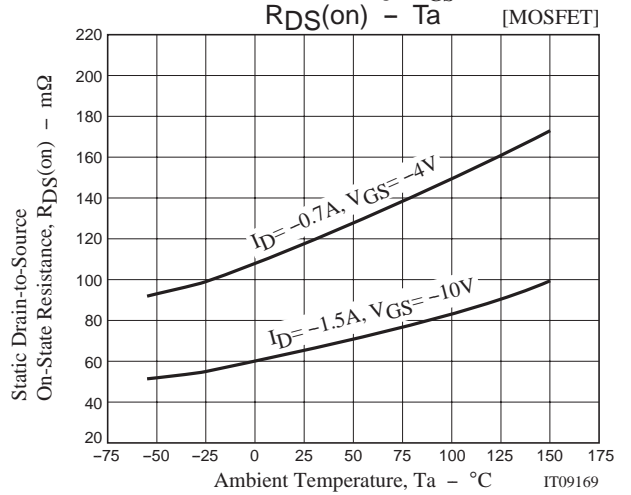
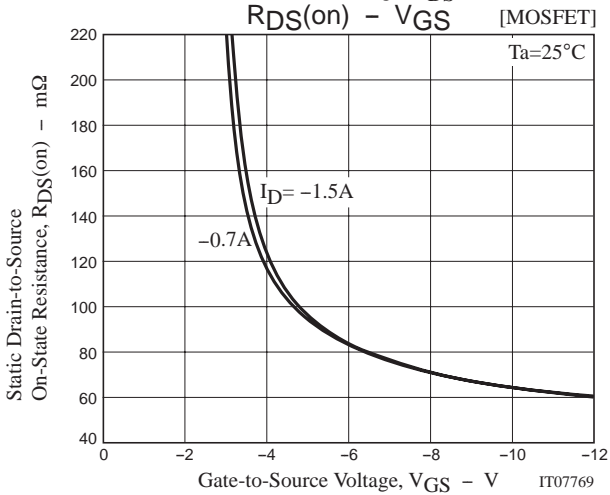
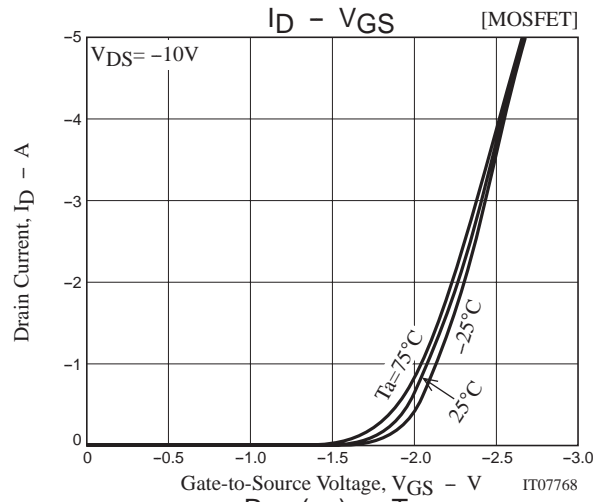
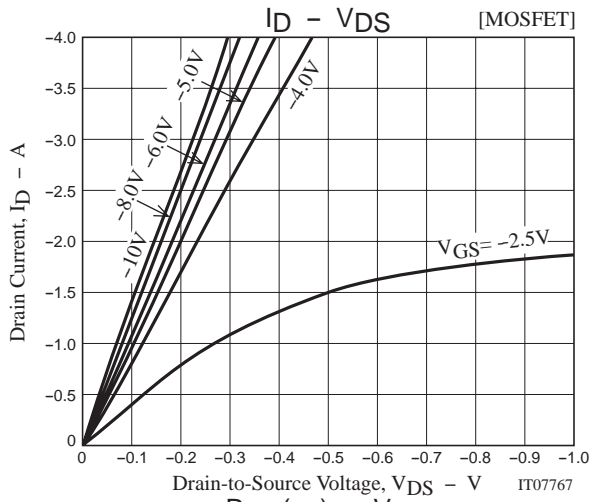
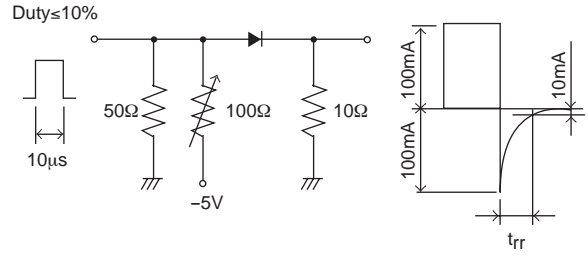
## Switching Time Test Circuit

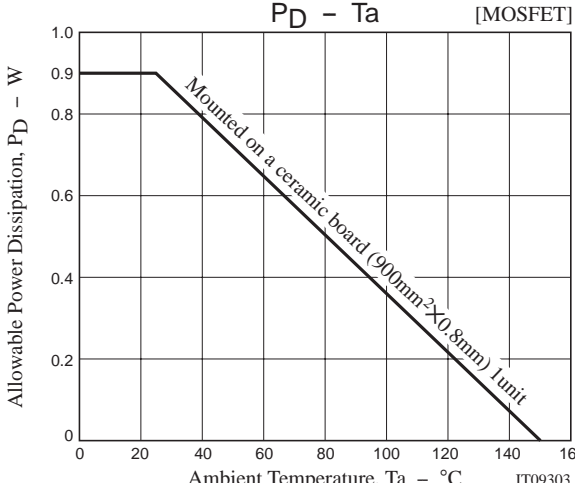
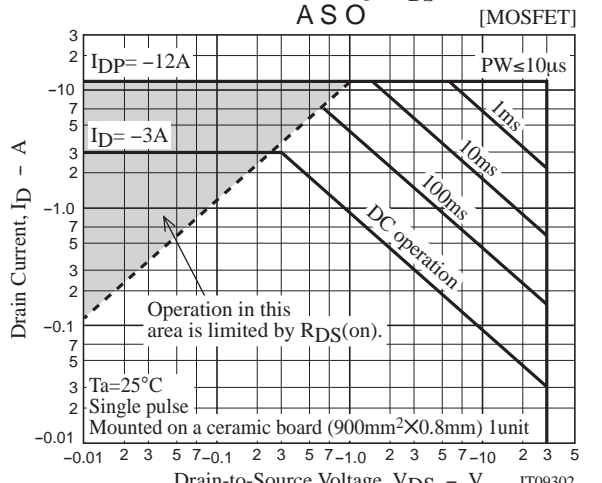
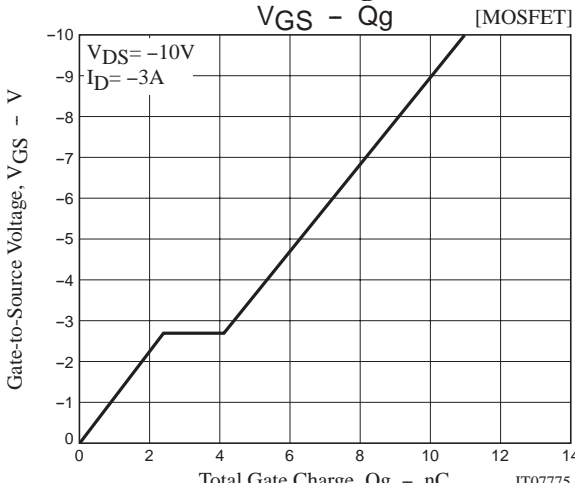
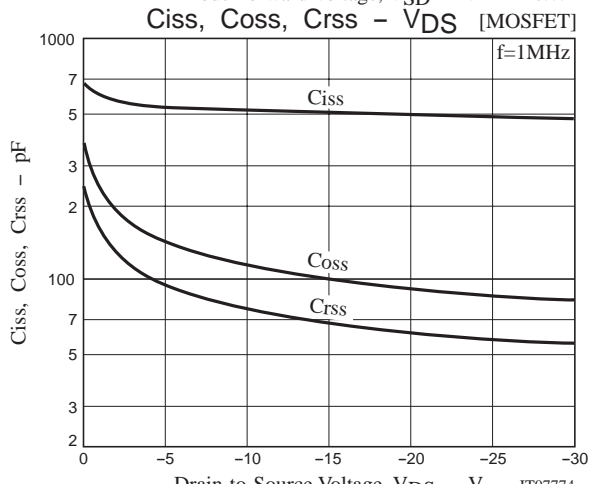
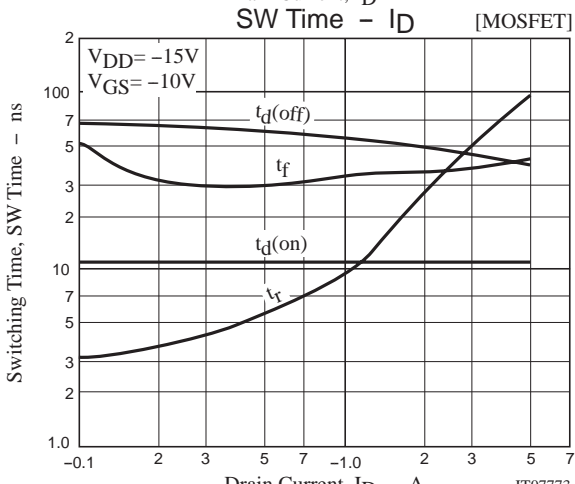
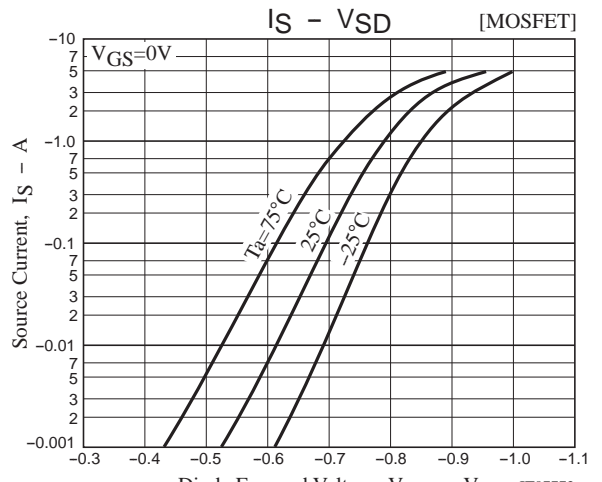
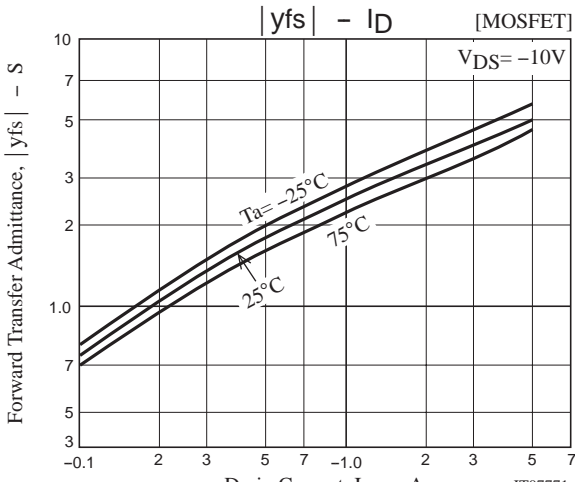
[MOSFET]

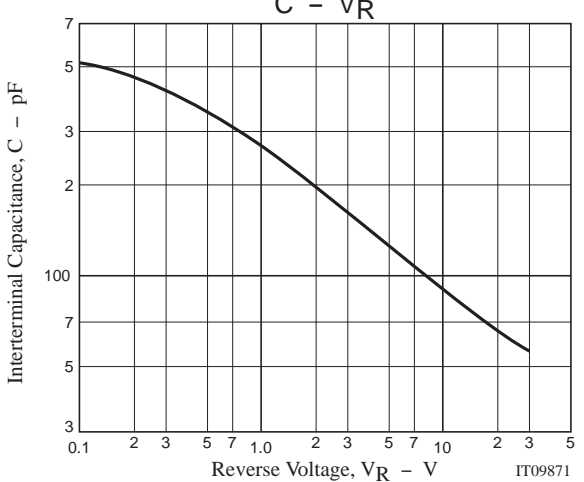
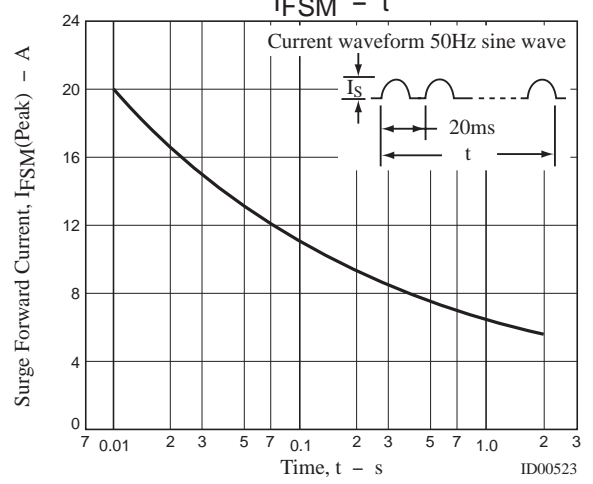
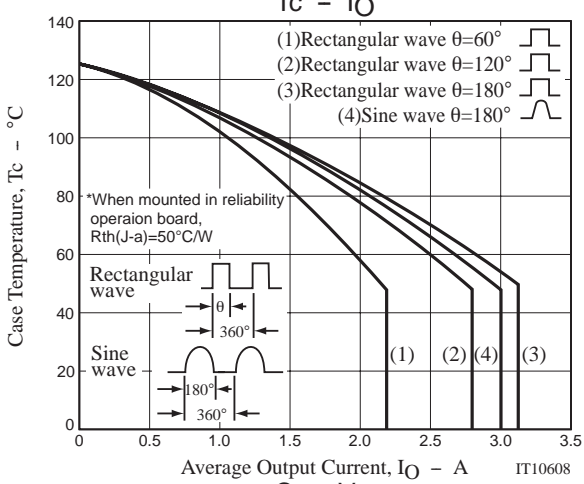
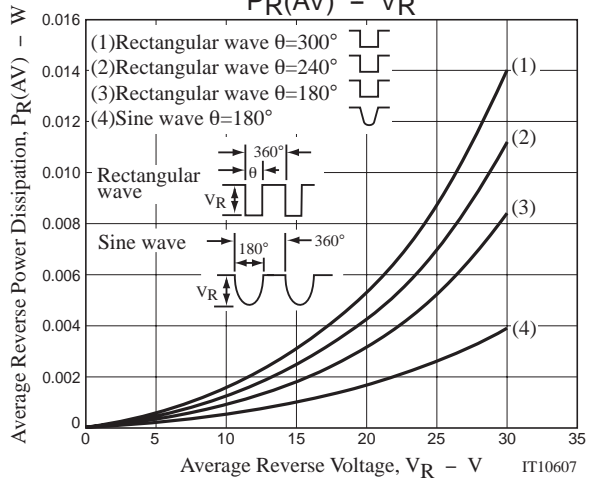
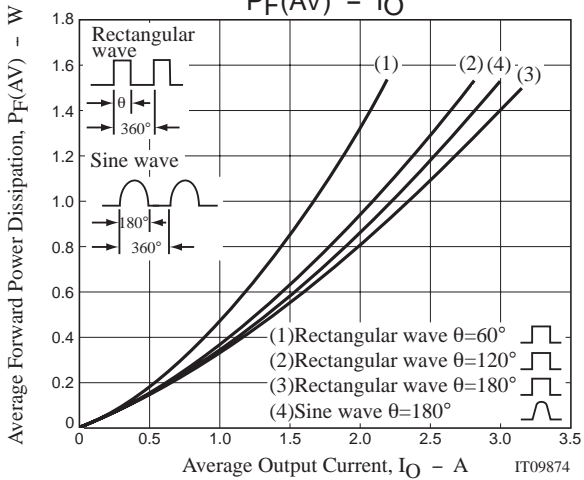
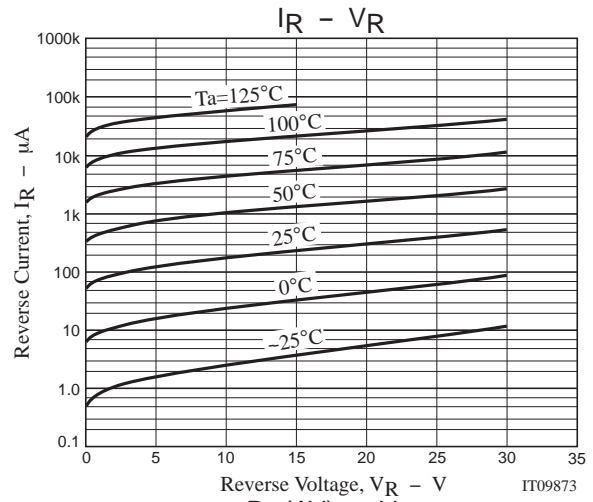
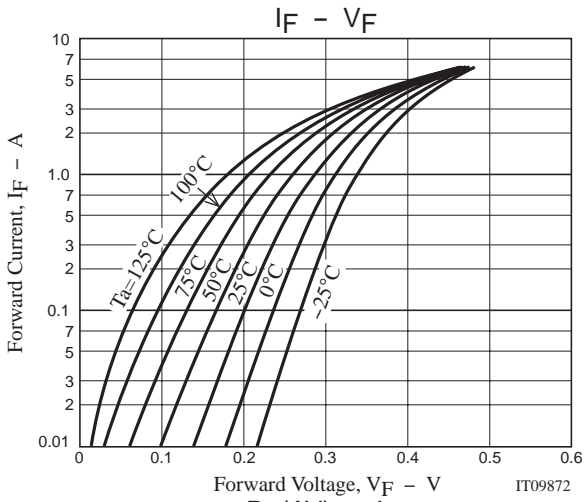


## $t_{rr}$ Test Circuit

[SBD]







Note on usage : Since the VEC2815 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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