

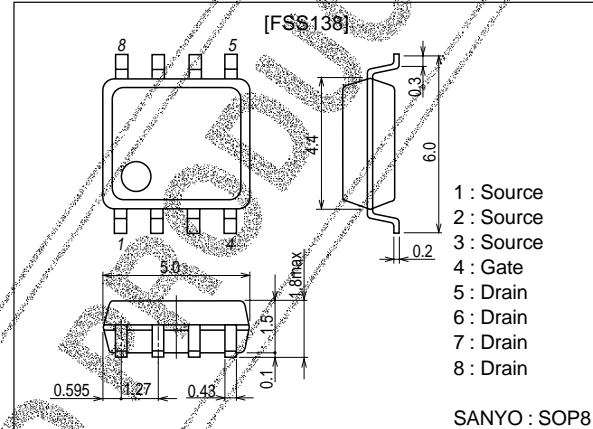
**SANYO****FSS138****DC/DC Converter Applications****Features**

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

**Package Dimensions**

unit:mm

2116

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

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	$V_{DSS}$		-30	V
Gate-to-Source Voltage	$V_{GSS}$		$\pm 20$	V
Drain Current (DC)	$I_D$		-11	A
Drain Current (pulse)	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycle $\leq 1\%$	-52	A
Allowable Power Dissipation	$P_D$	Mounted on a ceramic board (1200mm $^2$ $\times$ 0.8mm)	2.0	W
Channel Temperature	$T_{ch}$		150	$^\circ\text{C}$
Storage Temperature	$T_{stg}$		-55 to +150	$^\circ\text{C}$

**Electrical Characteristics** at  $T_a = 25^\circ\text{C}$ 

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D = -1\text{mA}$ , $V_{GS} = 0$	-30			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -30\text{V}$ , $V_{GS} = 0$			-1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS} = \pm 16\text{V}$ , $V_{DS} = 0$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS} = -10\text{V}$ , $I_D = -1\text{mA}$	-1.0		-2.4	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS} = -10\text{V}$ , $I_D = -11\text{A}$	17	25		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D = -11\text{A}$ , $V_{GS} = -10\text{V}$		11	15	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D = -4\text{A}$ , $V_{GS} = -4.5\text{V}$		15	21	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D = -4\text{A}$ , $V_{GS} = -4\text{V}$		16	23	$\text{m}\Omega$

Marking : S138

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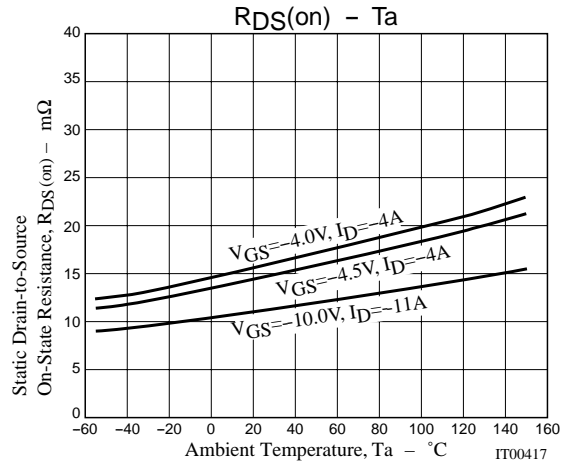
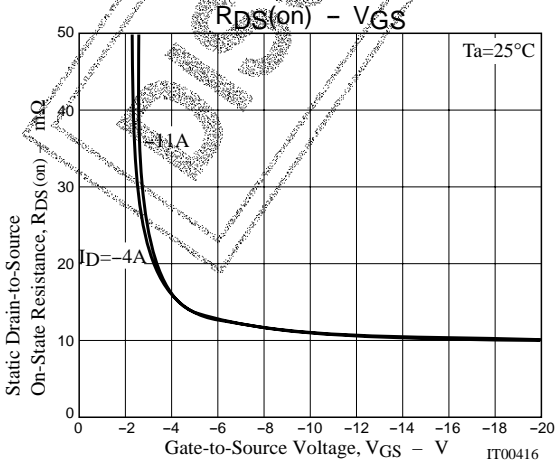
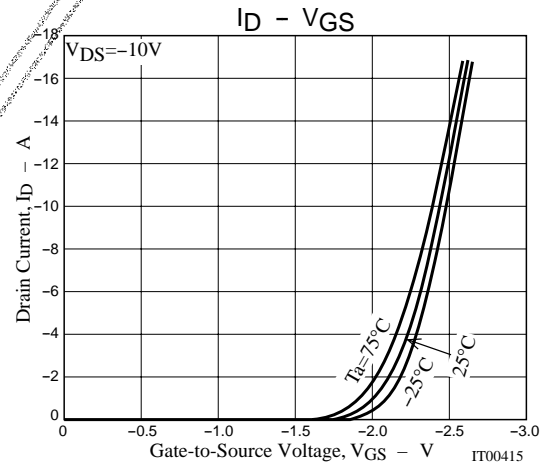
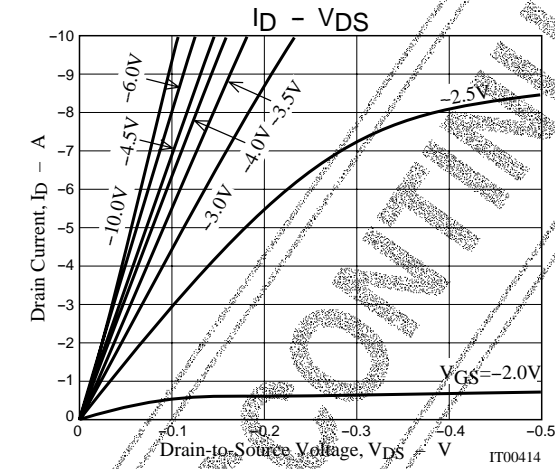
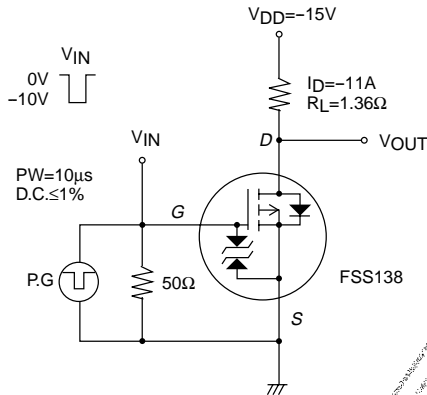
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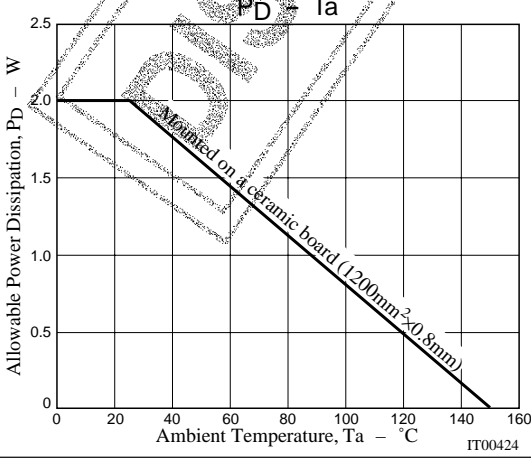
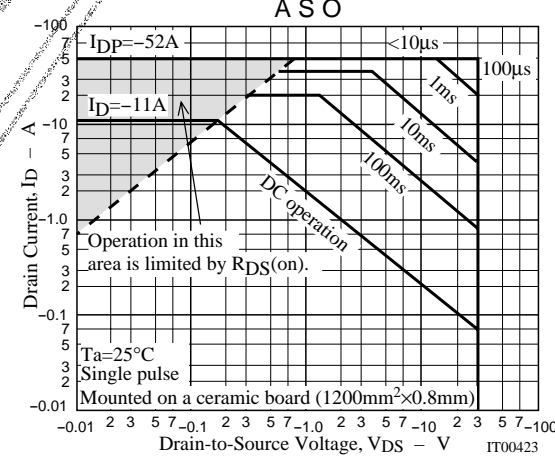
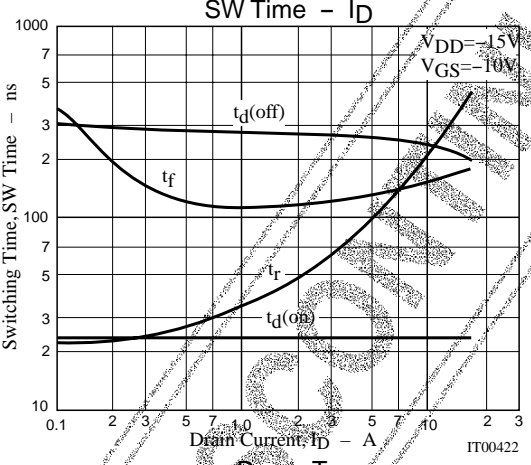
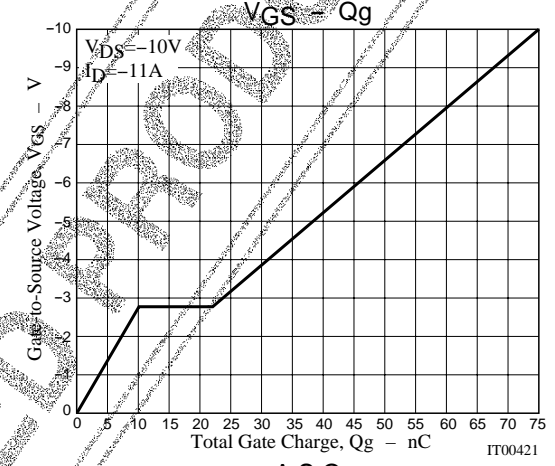
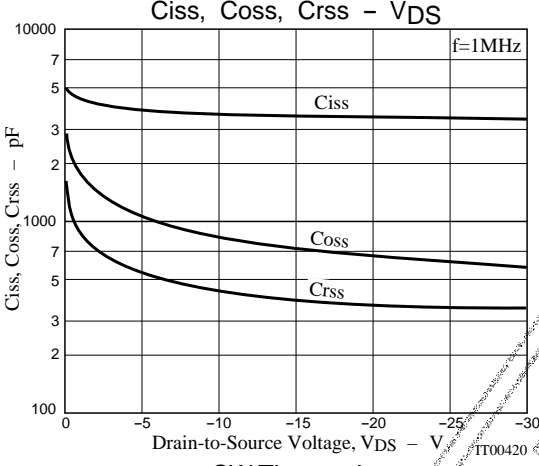
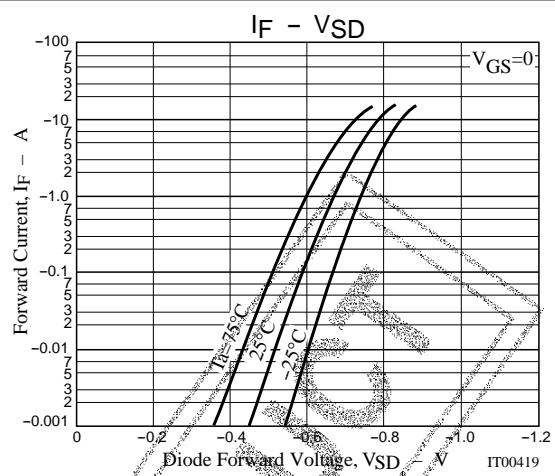
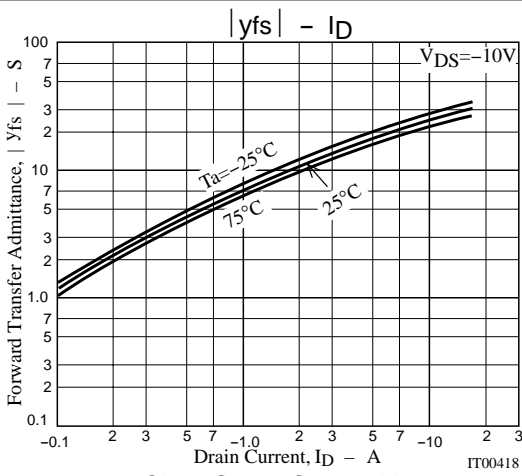
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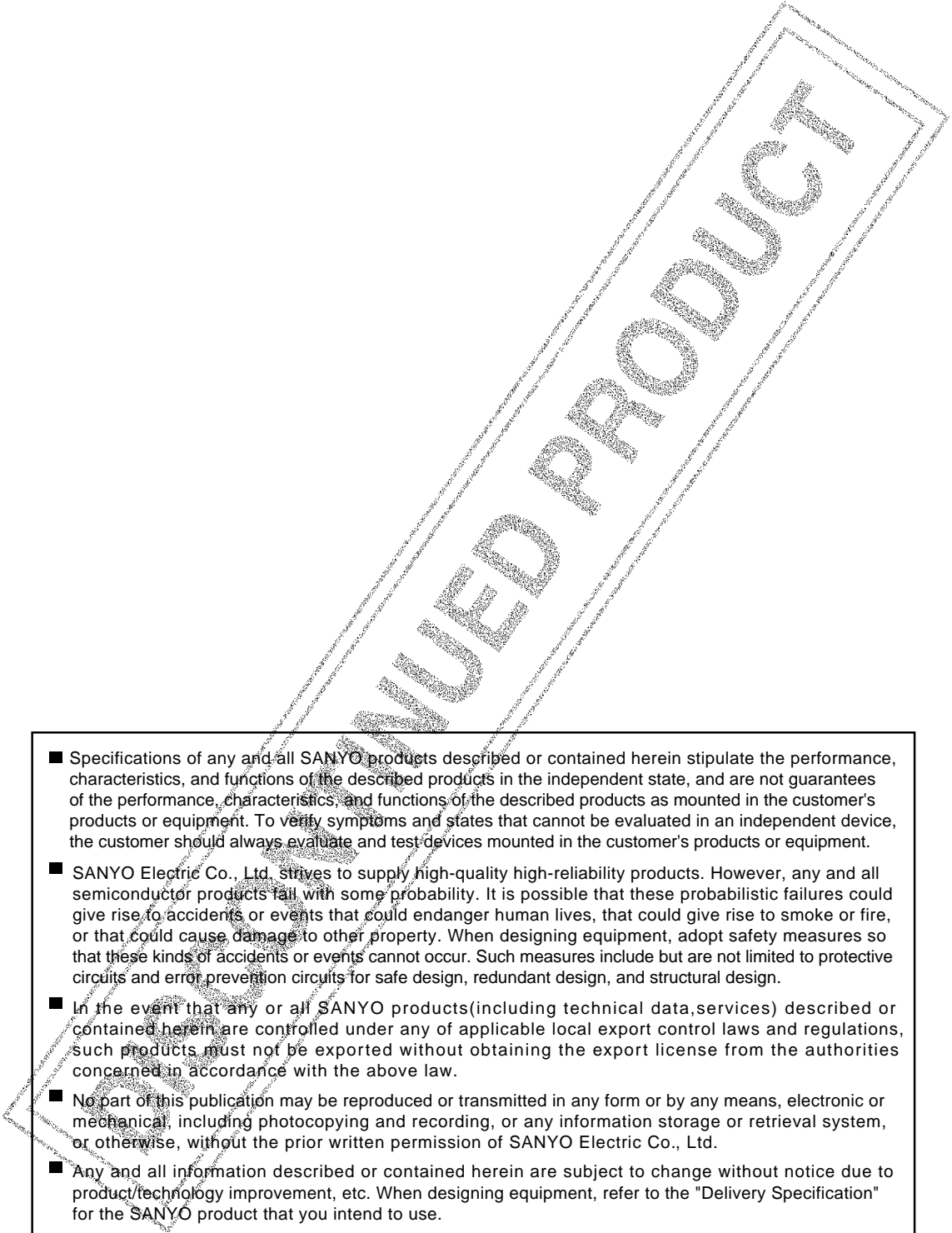
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Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	$V_{DS}=-10V, f=1MHz$		3700		pF
Output Capacitance	Coss	$V_{DS}=-10V, f=1MHz$		840		pF
Reverse Transfer Capacitance	Crss	$V_{DS}=-10V, f=1MHz$		440		pF
Turn-ON Delay Time	$t_{d(on)}$	See specified Test Circuit		24		ns
Rise Time	$t_r$	See specified Test Circuit		265		ns
Turn-OFF Delay Time	$t_{d(off)}$	See specified Test Circuit		240		ns
Fall Time	$t_f$	See specified Test Circuit		165		ns
Total Gate Charge	Qg	$V_{DS}=-10V, V_{GS}=-10V, I_D=-11A$		75		nC
Gate-to-Source Charge	Qgs	$V_{DS}=-10V, V_{GS}=-10V, I_D=-11A$		10		nC
Gate-to-Drain "Miller" Charge	Qgd	$V_{DS}=-10V, V_{GS}=-10V, I_D=-11A$		12		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-11A, V_{GS}=0$		-0.79	-1.5	V

## Switching Time Test Circuit





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