Ordering number : ENN6593

P-Channel Silicon MOSFET

FTD1011

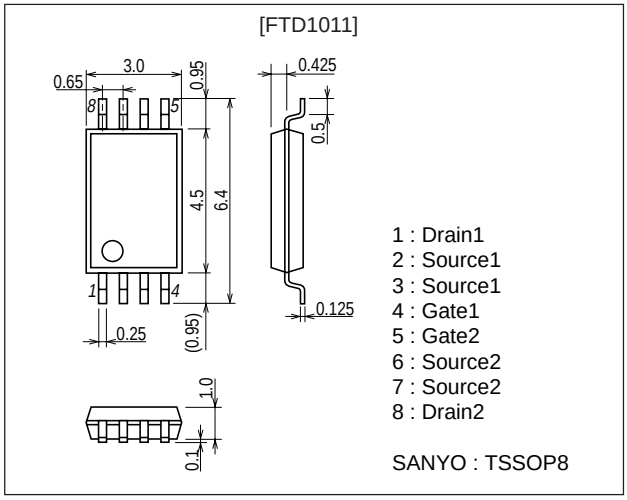
Ultrahigh-Speed Switching Applications

Features

- Low ON-resistance.
- 2.5V drive.
- Mount height of 1.1mm.
- Composite type, facilitating high-density mounting.

Package Dimensions

unit : mm
2155A



Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		−20	V
Gate-to-Source Voltage	V_{GSS}		±10	V
Drain Current (DC)	I_D		−3	A
Drain Current (Pulse)	I_{DP}	PW≤10μs, duty cycle≤1%	−15	A
Allowable Power Dissipation	P_D	Mounted on a ceramic board (1000mm²×0.8mm)1unit	0.8	W
Total Dissipation	P_T	Mounted on a ceramic board (1000mm²×0.8mm)	1.0	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C

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}=0	−20			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−20V, V_{GS}=0			−1	μA
Gate-to-Sourse Leakage Current	I_{GSS}	V_{GS}=±8V, V_{DS}=0			±10	μA
Cutoff Voltage	V_{GS}(off)	V_{DS}=−10V, I_D=−1mA	−0.4		−1.4	V
Forward Transfer Admittance	|yfs|	V_{DS}=−10V, I_D=−3A	6	8.8		S
Static Drain-to-Sourse on-State Resistance	R_{DS}(on)1	I_D=−3A, V_{GS}=−4V		50	65	mΩ
	R_{DS}(on)2	I_D=−2A, V_{GS}=−2.5V		68	96	mΩ

Marking : D1011

Continued on next page.

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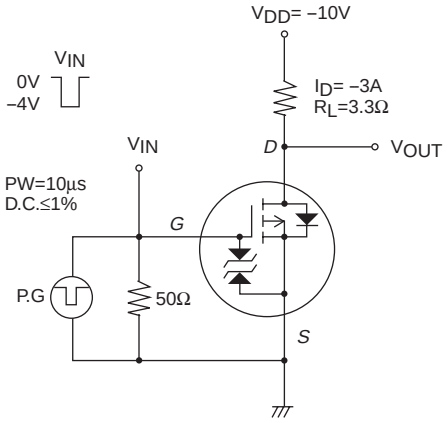
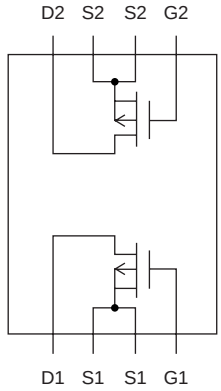
Continued from preceding page.

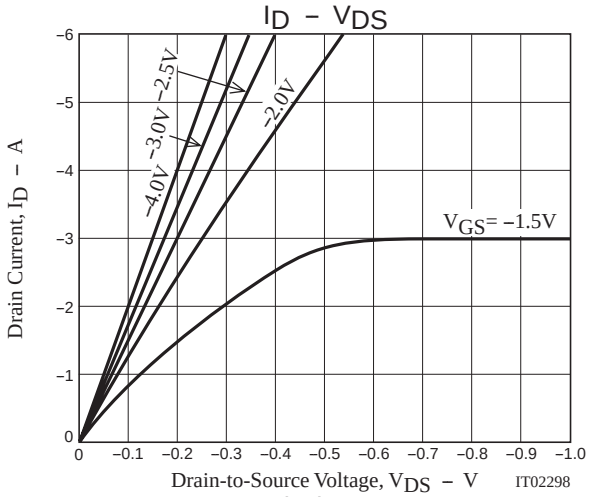
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Input Capacitance	Ciss	V_{DS}=–10V, f=1MHz		1000		pF
Output Capacitance	Coss	V_{DS}=–10V, f=1MHz		190		pF
Reverse Transfer Capacitance	Crss	V_{DS}=–10V, f=1MHz		120		pF
Turn-ON Delay Time	t_{d}(on)	See specified Test Circuit		13		ns
Rise Time	t_{r}	See specified Test Circuit		110		ns
Turn-OFF Delay Time	t_{d}(off)	See specified Test Circuit		65		ns
Fall Time	t_{f}	See specified Test Circuit		75		ns
Total Gate Charge	Qg	V_{DS}=–10V, V_{GS}=–10V, I_{D}=–3A		23		nC
Gate-to-Source Charge	Qgs	V_{DS}=–10V, V_{GS}=–10V, I_{D}=–3A		1.6		nC
Gate-to-Drain "Miller" Charge	Qgd	V_{DS}=–10V, V_{GS}=–10V, I_{D}=–3A		2.5		nC
Diode Forward Voltage	V_{SD}	I_{S}=–3A, V_{GS}=0		–0.8	–1.5	V

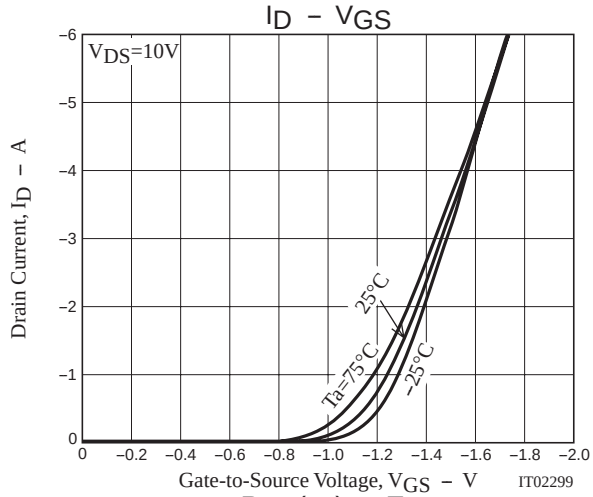
Switching Time Test Circuit

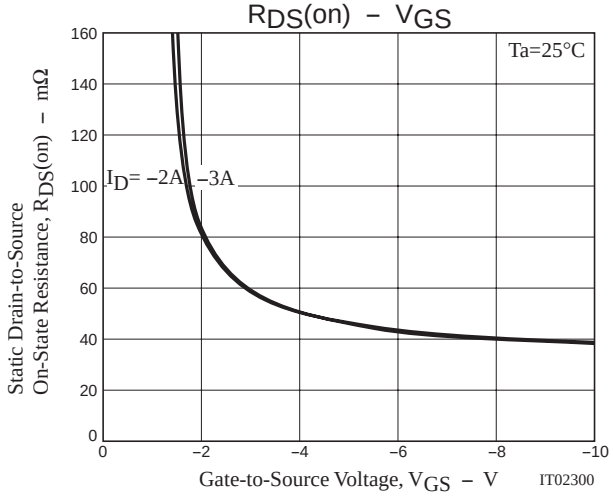


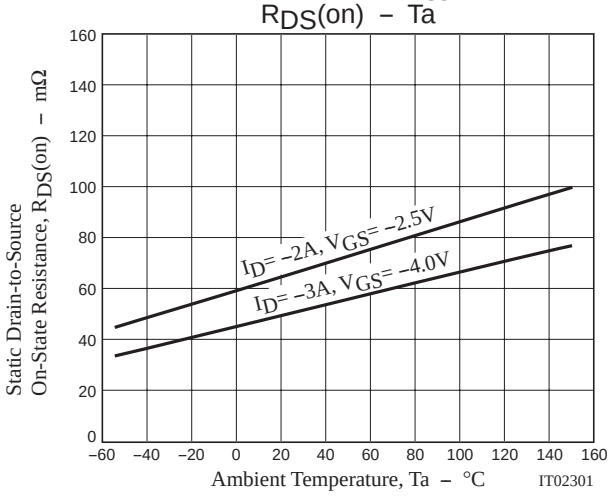
Electrical Connection

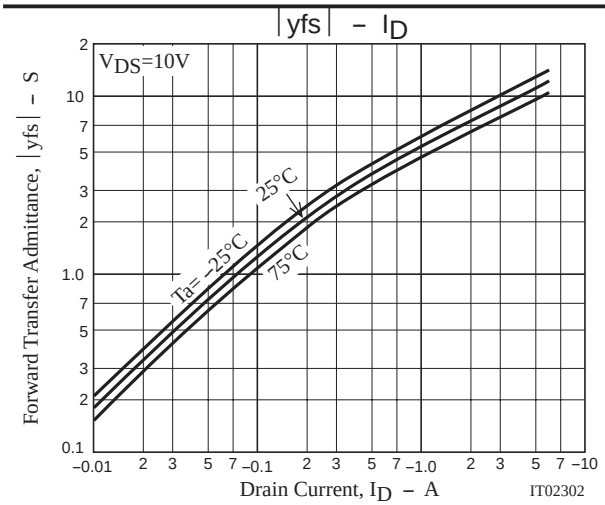


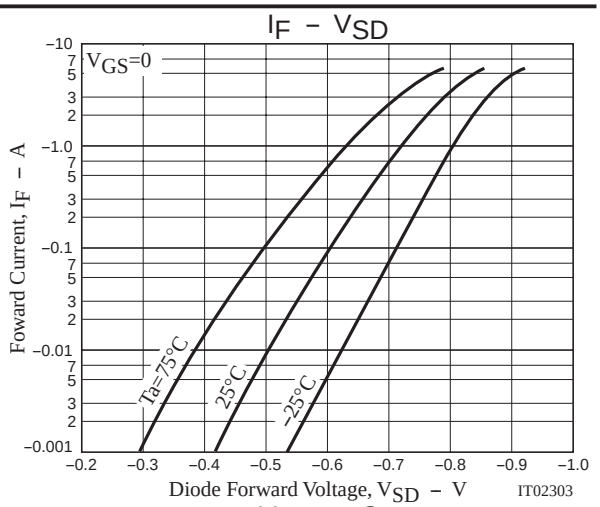


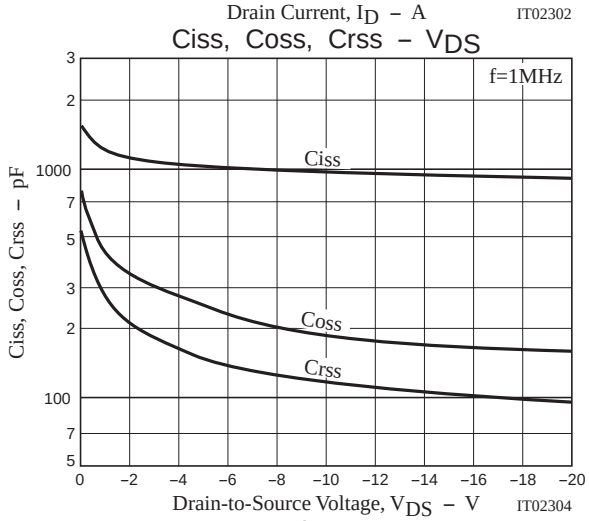


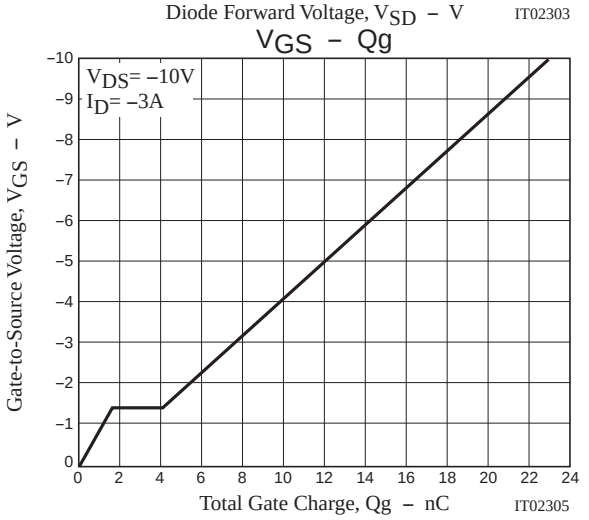


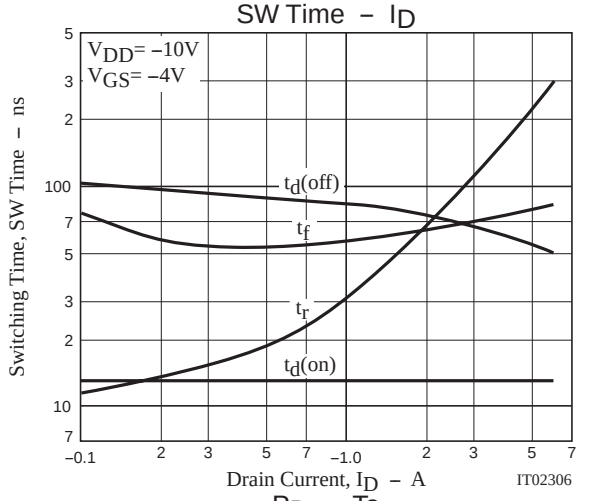


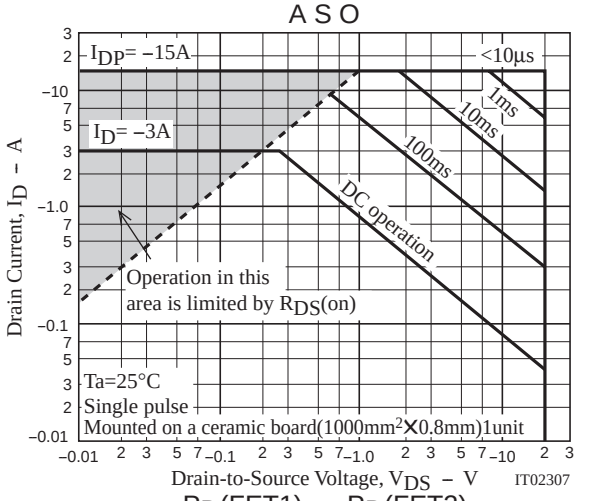

|yfs| – ID
VDS=10V
25°C
Ta= –25°C
75°C
Forward Transfer Admittance, |yfs| – S
Drain Current, ID – A
IT02302

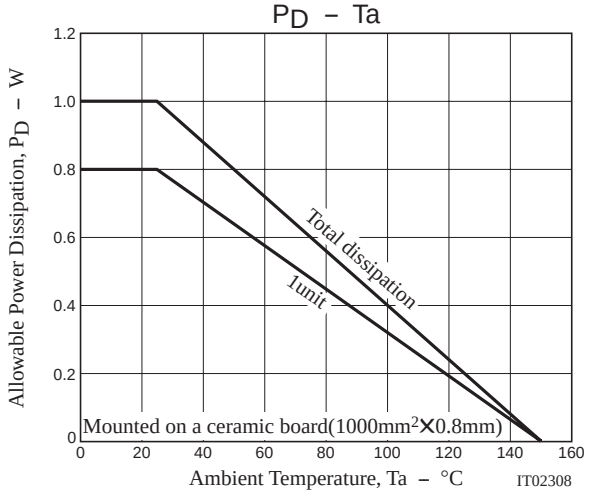

IF – VSD
VGS=0
Ta=75°C
25°C
–25°C
Foward Current, IF – A
Diode Forward Voltage, VSD – V
IT02303

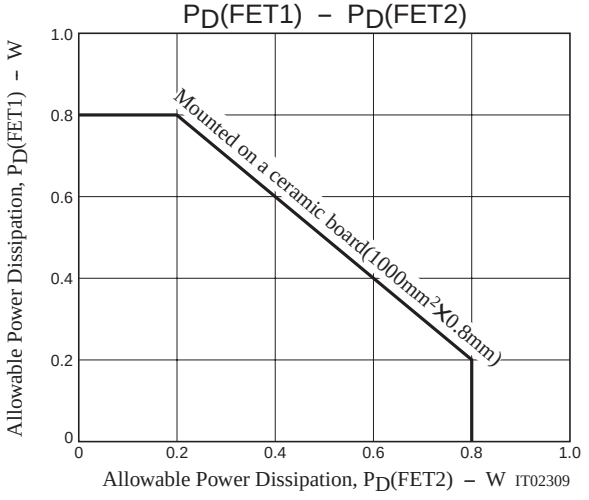

Ciss, Coss, Crss – VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT02304


VGS – Qg
VDS= –10V
ID= –3A
Gate-to-Source Voltage, VGS – V
Total Gate Charge, Qg – nC
IT02305


SW Time – ID
VDD= –10V
VGS= –4V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT02306


A S O
IDP= –15A
ID= –3A
<10µs
1ms
10ms
100ms
DC operation
Operation in this
area is limited by RDS(on)
Ta=25°C
Single pulse
Mounted on a ceramic board(1000mm2×0.8mm)1unit
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT02307


PD – Ta
Total dissipation
1unit
Mounted on a ceramic board(1000mm2×0.8mm)
Allowable Power Dissipation, PD – W
Ambient Temperature, Ta – °C
IT02308


PD(FET1) – PD(FET2)
Mounted on a ceramic board(1000mm2×0.8mm)
Allowable Power Dissipation, PD(FET1) – W
Allowable Power Dissipation, PD(FET2) – W
IT02309

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