Ordering number : ENA1623

SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

P-Channel Silicon MOSFET

ATP103 — General-Purpose Switching Device Applications

Features

- Low ON-resistance.
- Large current.
- Slim package.
- 4.5V drive.
- Halogen free compliance.

Specifications

Absolute Maximum Ratings at Ta=25°C

Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DSS}		−30	V
Gate-to-Source Voltage	V_{GSS}		±20	V
Drain Current (DC)	I_D		−55	A
Drain Current (PW≤10μs)	I_{DP}	PW≤10μs, duty cycle≤1%	−165	A
Allowable Power Dissipation	P_D	Tc=25°C	50	W
Channel Temperature	Tch		150	°C
Storage Temperature	Tstg		−55 to +150	°C
Avalanche Energy (Single Pulse) *1	E_{AS}		57	mJ
Avalanche Current *2	I_{AV}		−28	A

Note :*1 V_{DD}=−10V, L=100μH, I_{AV}=−28A
*2 L≤100μH, Single pulse

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	−30			V
Zero-Gate Voltage Drain Current	I_{DSS}	V_{DS}=−30V, V_{GS}=0V			−1	μA
Gate-to-Source Leakage Current	I_{GSS}	V_{GS}=±16V, V_{DS}=0V			±10	μA

Marking : ATP103

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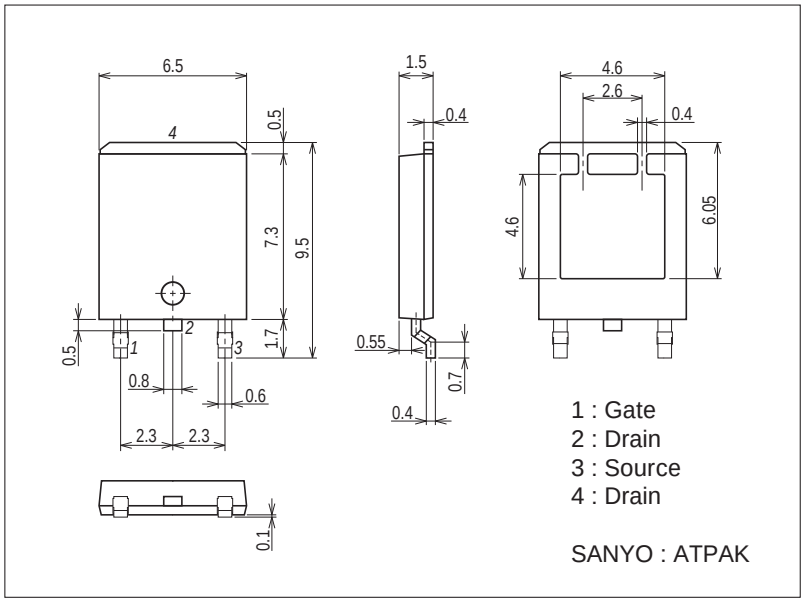
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Cutoff Voltage	V_{GS}(off)	V_{DS}=−10V, I_D=−1mA	−1.2		−2.6	V
Forward Transfer Admittance	| yfs |	V_{DS}=−10V, I_D=−28A		45		S
Static Drain-to-Source On-State Resistance	R_{DS}(on)1	I_D=−28A, V_{GS}=−10V		10	13	mΩ
	R_{DS}(on)2	I_D=−14A, V_{GS}=−4.5V		14.5	20.5	mΩ
Input Capacitance	Ciss	V_{DS}=−10V, f=1MHz		2430		pF
Output Capacitance	Coss	V_{DS}=−10V, f=1MHz		555		pF
Reverse Transfer Capacitance	Crss	V_{DS}=−10V, f=1MHz		395		pF
Turn-ON Delay Time	t_d(on)	See specified Test Circuit.		19		ns
Rise Time	t_r	See specified Test Circuit.		400		ns
Turn-OFF Delay Time	t_d(off)	See specified Test Circuit.		150		ns
Fall Time	t_f	See specified Test Circuit.		145		ns
Total Gate Charge	Qg	V_{DS}=−15V, V_{GS}=−10V, I_D=−55A		47		nC
Gate-to-Source Charge	Qgs	V_{DS}=−15V, V_{GS}=−10V, I_D=−55A		10		nC
Gate-to-Drain “Miller” Charge	Qgd	V_{DS}=−15V, V_{GS}=−10V, I_D=−55A		8.7		nC
Diode Forward Voltage	V_{SD}	I_S=−55A, V_{GS}=0V		−1.03	−1.5	V

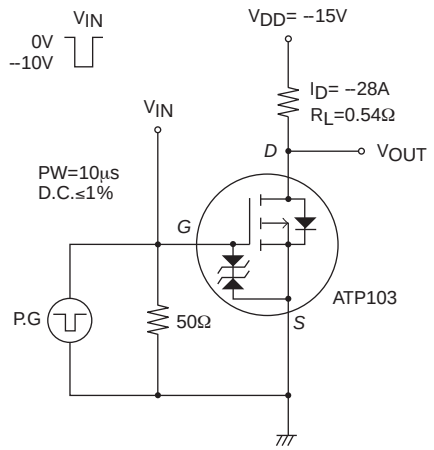
Package Dimensions

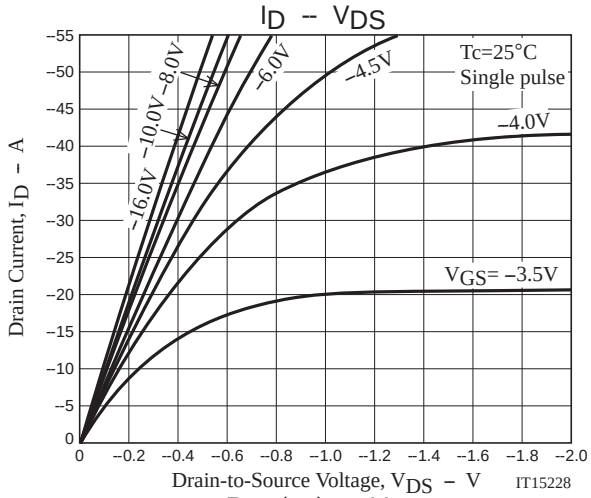
unit : mm (typ)

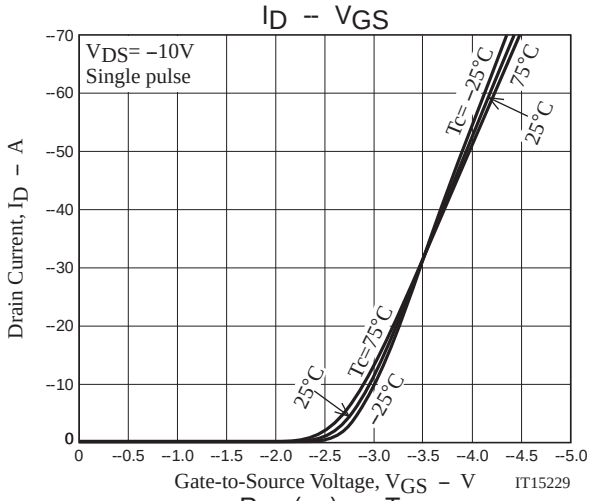
7057-001

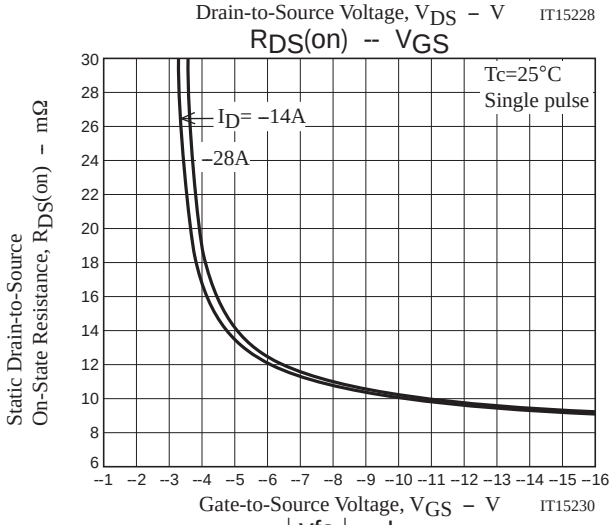


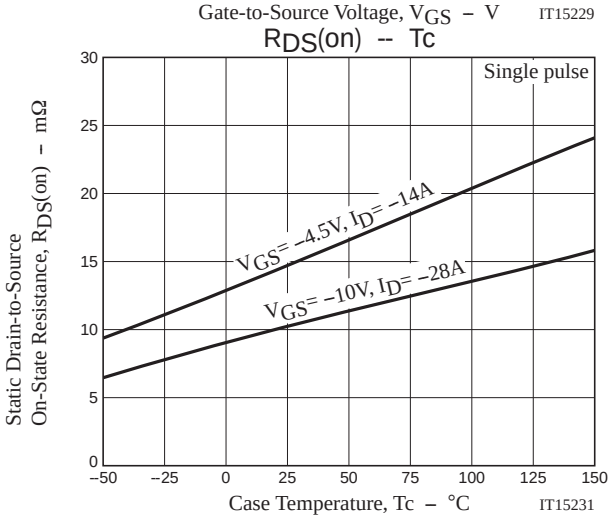
Switching Time Test Circuit

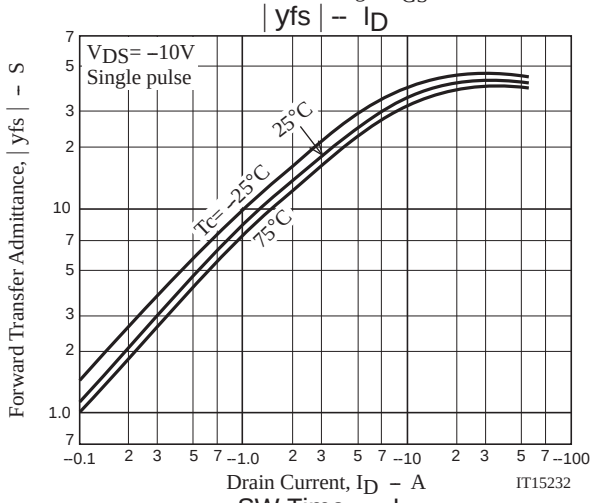


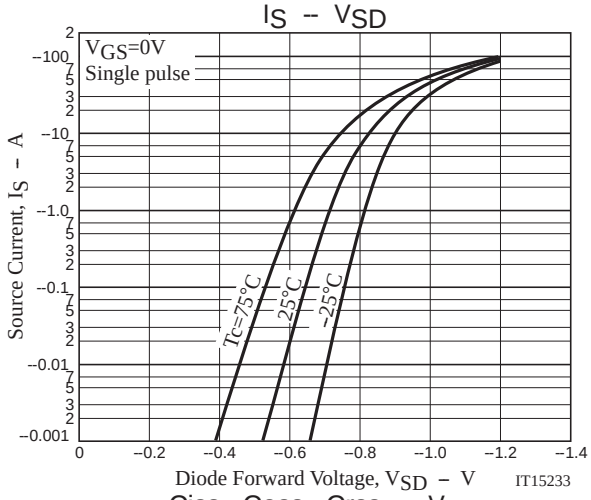

ID -- VDS
Tc=25°C
Single pulse
–4.0V
VGS= –3.5V
Drain Current, ID – A
Drain-to-Source Voltage, VDS – V
IT15228

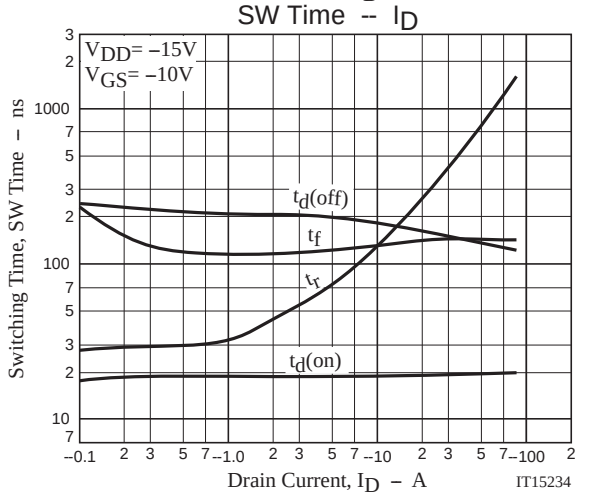

ID -- VGS
VDS= –10V
Single pulse
Tc= –25°C
75°C
25°C
Drain Current, ID – A
Gate-to-Source Voltage, VGS – V
IT15229

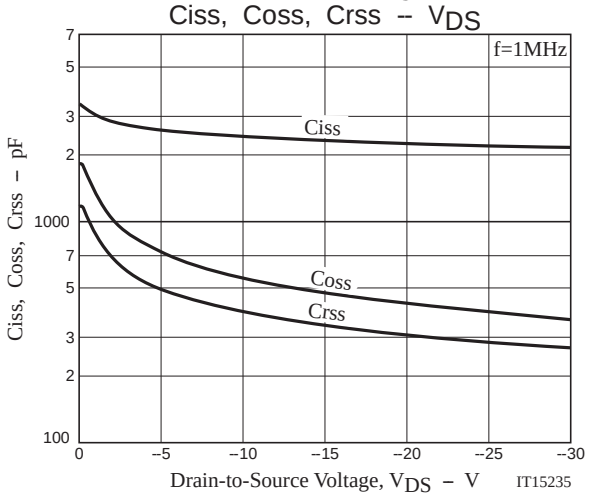

RDS(on) -- VGS
Tc=25°C
Single pulse
ID= –14A
–28A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Gate-to-Source Voltage, VGS – V
IT15230

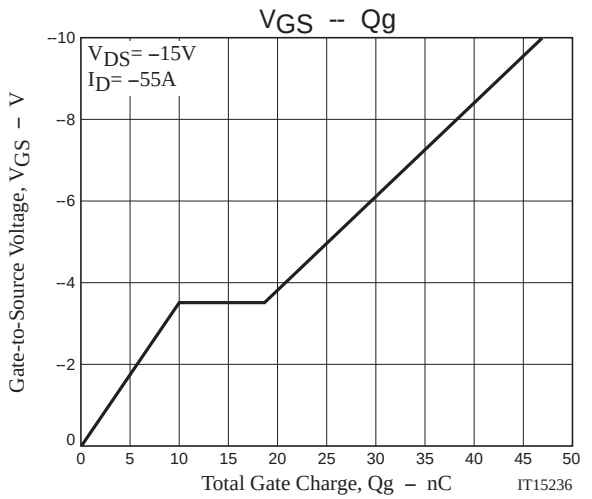

RDS(on) -- Tc
Single pulse
VGS= –4.5V, ID= –14A
VGS= –10V, ID= –28A
Static Drain-to-Source On-State Resistance, RDS(on) – mΩ
Case Temperature, Tc – °C
IT15231

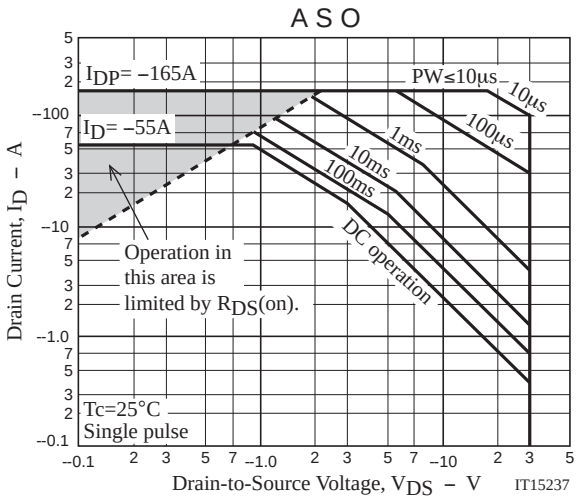

| yfs | -- ID
VDS= –10V
Single pulse
25°C
Tc= –25°C
75°C
Forward Transfer Admittance, | yfs | – S
Drain Current, ID – A
IT15232

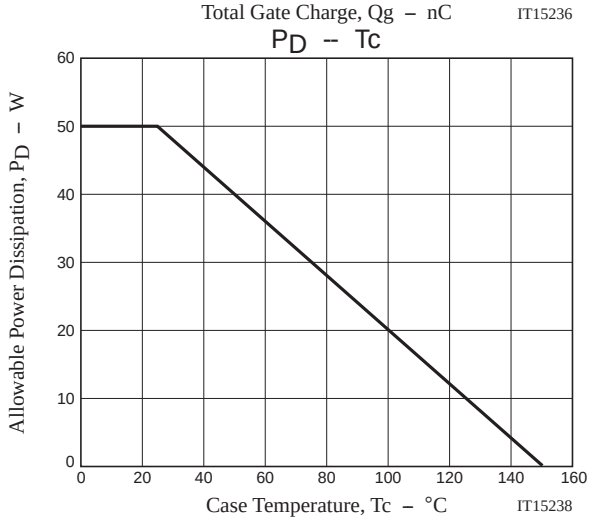

IS -- VSD
VGS=0V
Single pulse
Tc=75°C
25°C
–25°C
Source Current, IS – A
Diode Forward Voltage, VSD – V
IT15233

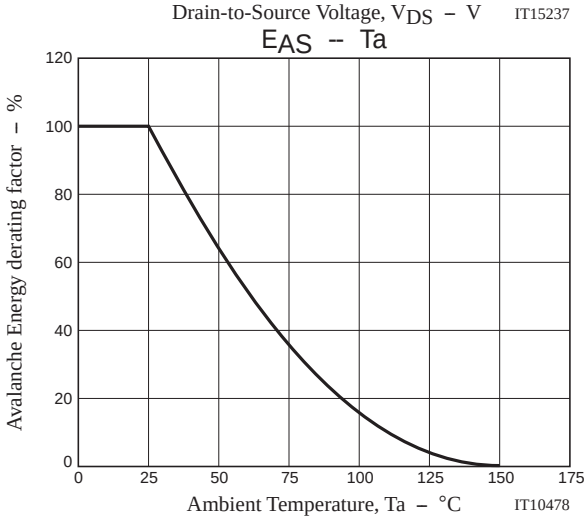

SW Time -- ID
VDD= –15V
VGS= –10V
td(off)
tf
tr
td(on)
Switching Time, SW Time – ns
Drain Current, ID – A
IT15234


Ciss, Coss, Crss -- VDS
f=1MHz
Ciss
Coss
Crss
Ciss, Coss, Crss – pF
Drain-to-Source Voltage, VDS – V
IT15235









Note on usage : Since the ATP103 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.