



# ATP112 — P-Channel Silicon MOSFET

## General-Purpose Switching Device Applications

### Features

- ON-resistance  $R_{DS(on)} = 33\text{m}\Omega$  (typ.)
- 4V drive
- Input Capacitance  $C_{iss} = 1450\text{pF}$  (typ.)
- Halogen free compliance

### 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)	$I_D$		-25	A
Drain Current ( $PW \leq 10\mu\text{s}$ )	$I_{DP}$	$PW \leq 10\mu\text{s}$ , duty cycles $\leq 1\%$	-75	A
Allowable Power Dissipation	$P_D$	$T_c = 25^\circ\text{C}$	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	$E_{AS}$		50	mJ
Avalanche Current *2	$I_{AV}$		-13	A

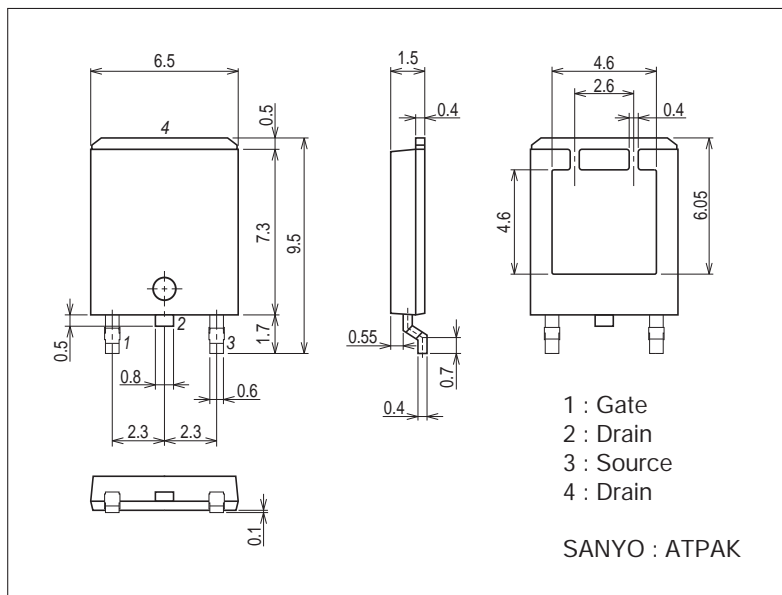
Note : \*1  $V_{DD} = -10\text{V}$ ,  $L = 500\mu\text{H}$ ,  $I_{AV} = -13\text{A}$

\*2  $L \leq 500\mu\text{H}$ , Single pulse

### Package Dimensions

unit : mm (typ)

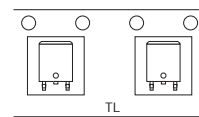
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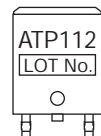
### Product & Package Information

- Package : ATPAK
- JEITA, JEDEC : -
- Minimum Packing Quantity : 3,000 pcs./reel

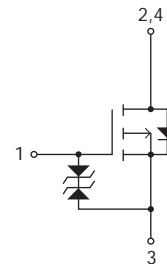
### Packing Type: TL



### Marking



### Electrical Connection

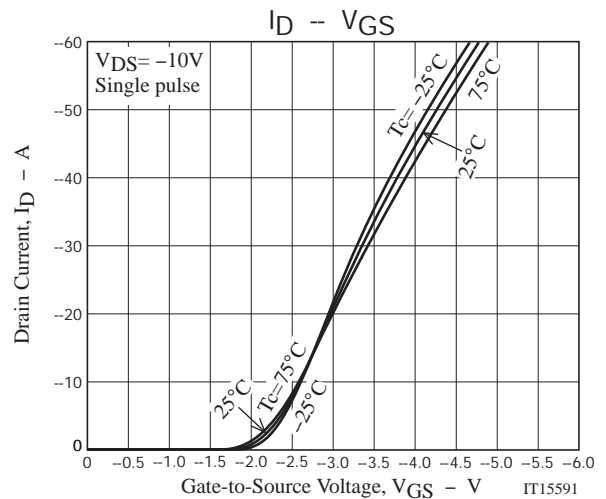
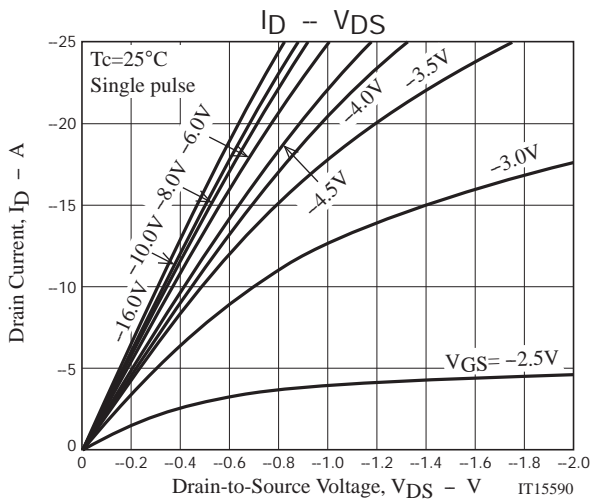
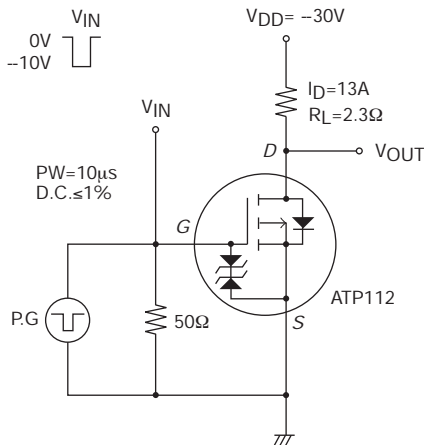


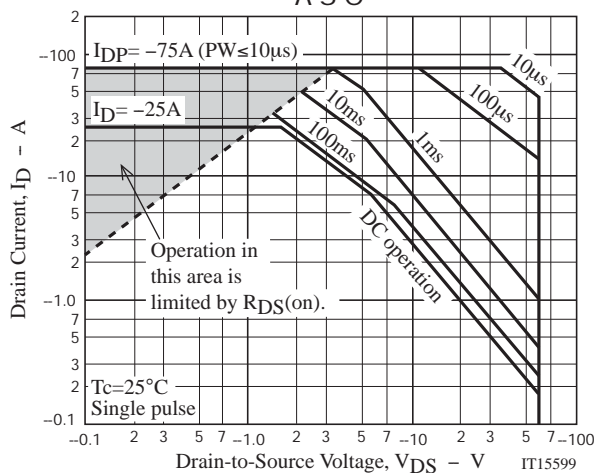
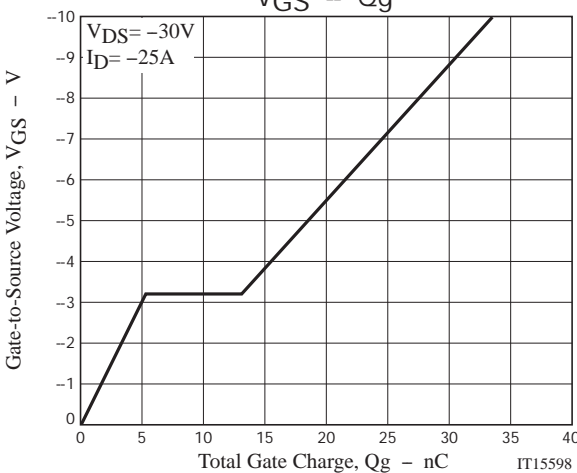
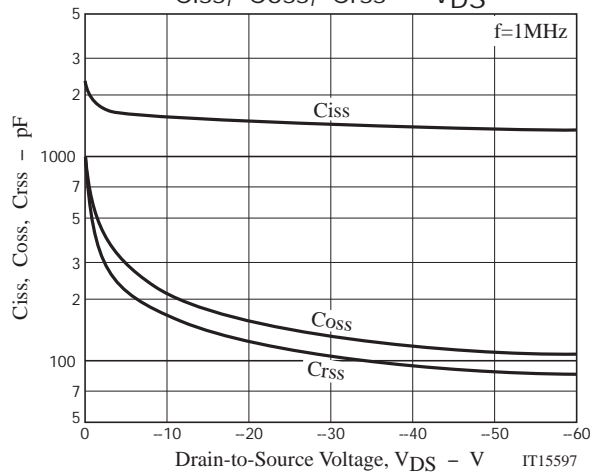
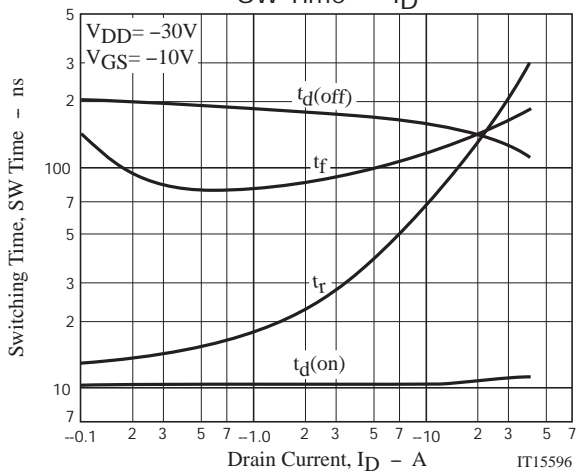
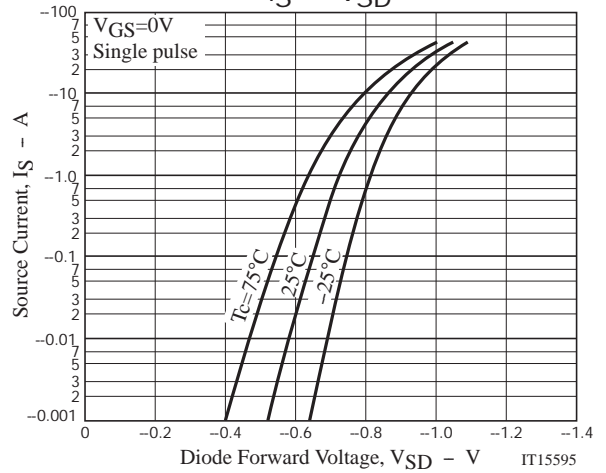
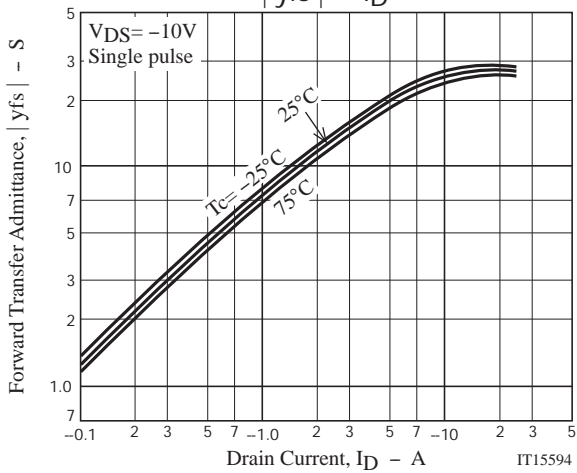
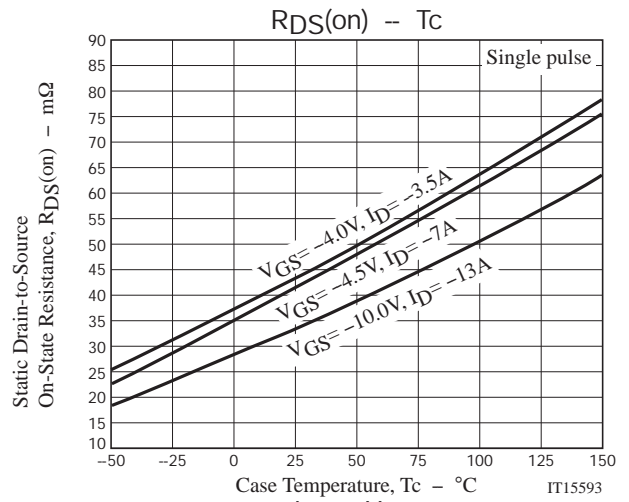
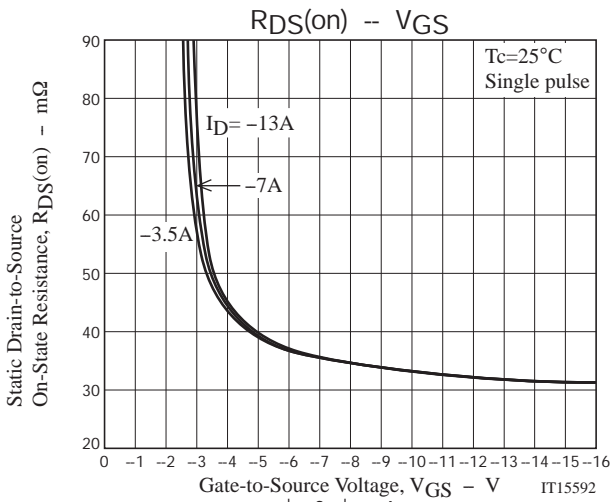
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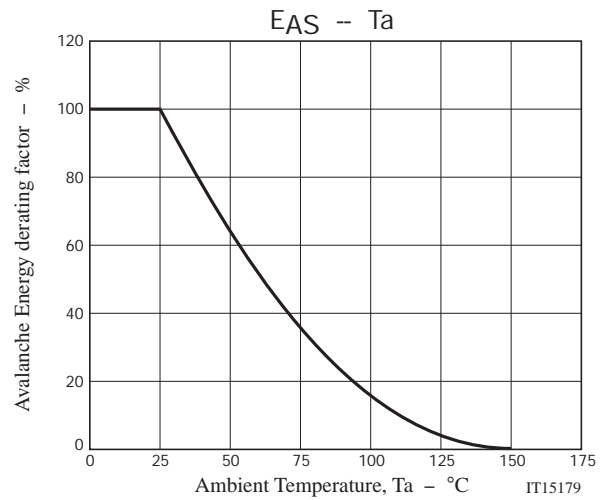
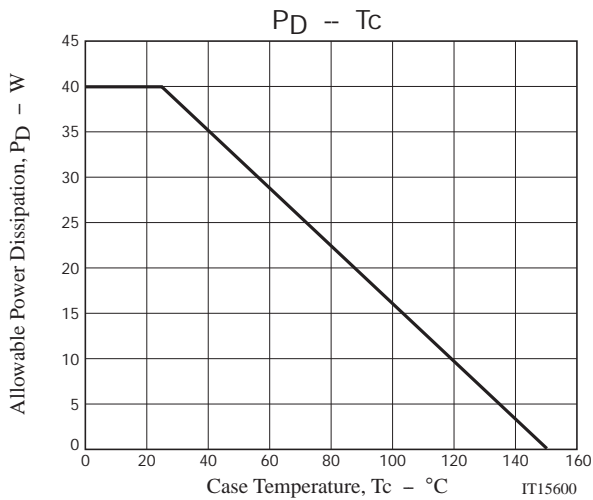
## Electrical Characteristics at $T_a=25^\circ\text{C}$

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=-1\text{mA}, V_{GS}=0\text{V}$	-60			V
Zero-Gate Voltage Drain Current	$I_{DSS}$	$V_{DS}=-60\text{V}, V_{GS}=0\text{V}$			-1	$\mu\text{A}$
Gate-to-Source Leakage Current	$I_{GSS}$	$V_{GS}=\pm 16\text{V}, V_{DS}=0\text{V}$			$\pm 10$	$\mu\text{A}$
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=-10\text{V}, I_D=-1\text{mA}$	-1.2		-2.6	V
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=-10\text{V}, I_D=-13\text{A}$		24		S
Static Drain-to-Source On-State Resistance	$R_{DS(on)1}$	$I_D=-13\text{A}, V_{GS}=-10\text{V}$		33	43	$\text{m}\Omega$
	$R_{DS(on)2}$	$I_D=-7\text{A}, V_{GS}=-4.5\text{V}$		42	59	$\text{m}\Omega$
	$R_{DS(on)3}$	$I_D=-3.5\text{A}, V_{GS}=-4\text{V}$		45	63	$\text{m}\Omega$
Input Capacitance	$C_{iss}$	$V_{DS}=-20\text{V}, f=1\text{MHz}$		1450		pF
Output Capacitance	$C_{oss}$	$V_{DS}=-20\text{V}, f=1\text{MHz}$		155		pF
Reverse Transfer Capacitance	$C_{rss}$	$V_{DS}=-20\text{V}, f=1\text{MHz}$		125		pF
Turn-ON Delay Time	$t_d(on)$	See specified Test Circuit.		10		ns
Rise Time	$t_r$	See specified Test Circuit.		80		ns
Turn-OFF Delay Time	$t_d(off)$	See specified Test Circuit.		150		ns
Fall Time	$t_f$	See specified Test Circuit.		120		ns
Total Gate Charge	$Q_g$	$V_{DS}=-30\text{V}, V_{GS}=-10\text{V}, I_D=-25\text{A}$		33.5		nC
Gate-to-Source Charge	$Q_{gs}$	$V_{DS}=-30\text{V}, V_{GS}=-10\text{V}, I_D=-25\text{A}$		5.3		nC
Gate-to-Drain "Miller" Charge	$Q_{gd}$	$V_{DS}=-30\text{V}, V_{GS}=-10\text{V}, I_D=-25\text{A}$		7.9		nC
Diode Forward Voltage	$V_{SD}$	$I_S=-25\text{A}, V_{GS}=0\text{V}$		-0.97	-1.5	V

## Switching Time Test Circuit







Note on usage : Since the ATP112 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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