



SANYO Semiconductors

DATA SHEET

An ON Semiconductor Company

N-Channel Silicon MOSFET

ATP613 — General-Purpose Switching Device Applications

Features

- Reverse recovery time $t_{rr}=60\text{ns}(\text{typ.})$
- Input Capacitance $C_{iss}=350\text{pF}(\text{typ.})$
- Halogen free compliance
- ON-resistance $R_{DS(\text{on})}=1.55\Omega(\text{typ.})$
- 10V drive

Specifications

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

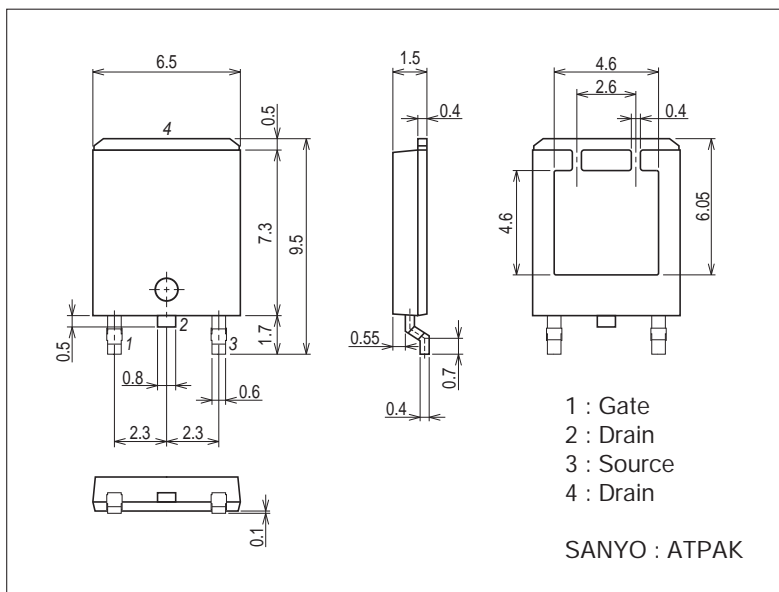
Parameter	Symbol	Conditions	Ratings	Unit
Drain-to-Source Voltage	V_{DS}		500	V
Gate-to-Source Voltage	V_{GS}		± 30	V
Drain Current (DC)	I_D		5.5	A
Drain Current (Pulse)	I_{DP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	19	A
Source-to-Drain Diode Forward Current (DC)	I_S		5.5	A
Source-to-Drain Diode Forward Current (Pulse)	I_{SP}	$PW \leq 10\mu\text{s}$, duty cycle $\leq 1\%$	19	A
Allowable Power Dissipation	P_D	$T_c=25^\circ\text{C}$	70	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}		93	mJ
Avalanche Current *2	I_{AV}		5.5	A

Note : *1 $V_{DD}=99\text{V}$, $L=5\text{mH}$, $I_{AV}=5.5\text{A}$ *2 $L \leq 5\text{mH}$, Single pulse (Fig.1)

Package Dimensions

unit : mm (typ)

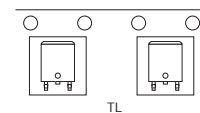
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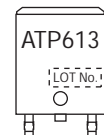
Product & Package Information

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

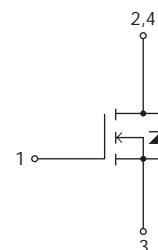
Packing Type: TL



Marking



Electrical Connection



ATP613

Electrical Characteristics at Ta=25°C

Parameter	Symbol	Conditions	Ratings			Unit	
			min	typ	max		
Drain-to-Source Breakdown Voltage	$V_{(BR)DSS}$	$I_D=10mA, V_{GS}=0V$	500			V	
Zero-Gate Voltage Drain Current	I_{DSS}	$V_{DS}=400V, V_{GS}=0V$			100	μA	
Gate-to-Source Leakage Current	I_{GSS}	$V_{GS}=\pm 30V, V_{DS}=0V$			± 100	nA	
Cutoff Voltage	$V_{GS(off)}$	$V_{DS}=10V, I_D=1mA$	3		5	V	
Forward Transfer Admittance	$ y_{fs} $	$V_{DS}=10V, I_D=2.75A$	1.5	2.9		S	
Static Drain-to-Source On-State Resistance	$R_{DS(on)}$	$I_D=2.75A, V_{GS}=10V$		1.55	2.0	Ω	
Input Capacitance	C_{iss}	$V_{DS}=30V, f=1MHz$		350		pF	
Output Capacitance	C_{oss}				68		pF
Reverse Transfer Capacitance	C_{rss}				15		pF
Turn-ON Delay Time	$t_{d(on)}$				14.2		ns
Rise Time	t_r	See Fig.2		46		ns	
Turn-OFF Delay Time	$t_{d(off)}$				37.6		ns
Fall Time	t_f				20.4		ns
Total Gate Charge	Q_g				13.8		nC
Gate-to-Source Charge	Q_{gs}	$V_{DS}=200V, V_{GS}=10V, I_D=5.5A$		3.2		nC	
Gate-to-Drain "Miller" Charge	Q_{gd}			7.6		nC	
Diode Forward Voltage	V_{SD}		$I_S=5.5A, V_{GS}=0V$		1.1	1.5	V
Reverse Recovery Time	t_{rr}	See Fig.3		60		ns	
Reverse Recovery Charge	Q_{rr}		$I_S=5.5A, V_{GS}=0V, di/dt=100A/\mu s$		120		nC

Fig.1 Avalanche Resistance Test Circuit

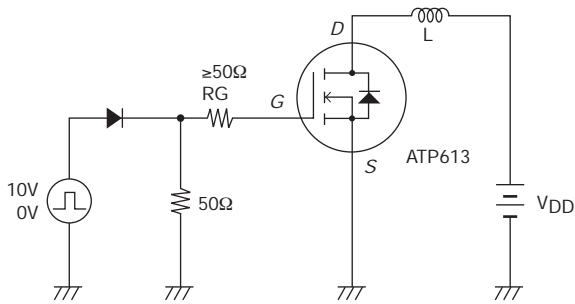


Fig.2 Switching Time Test Circuit

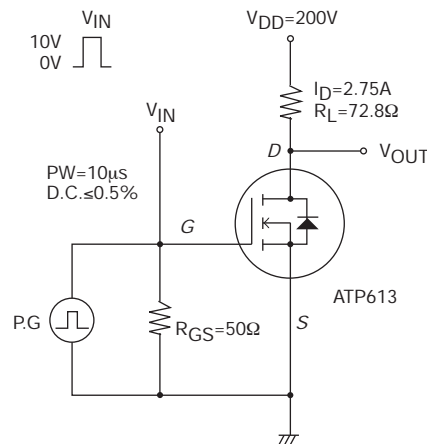
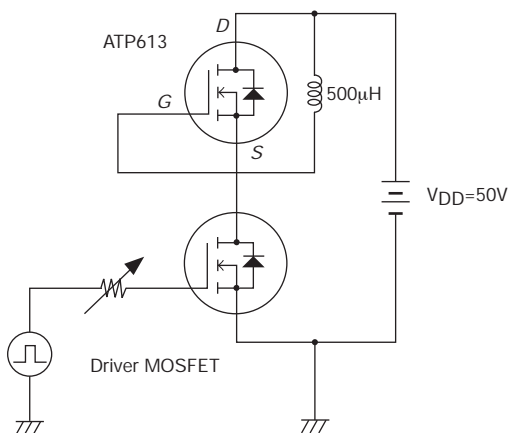
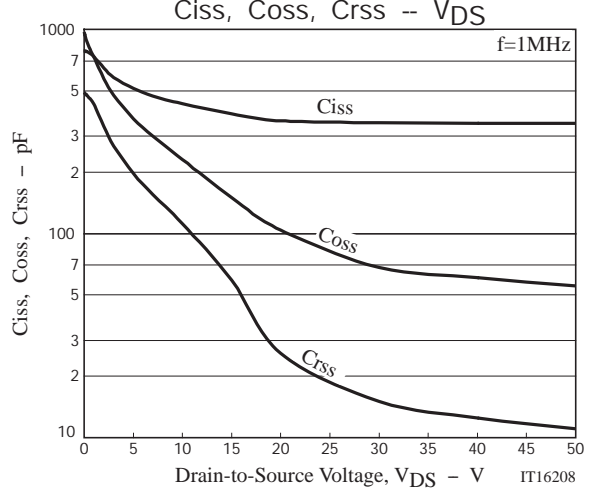
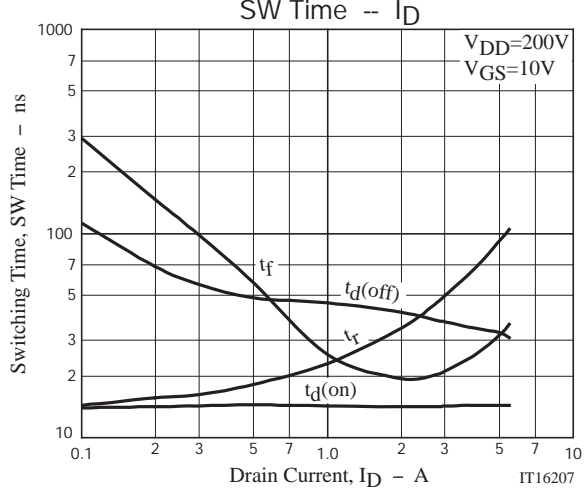
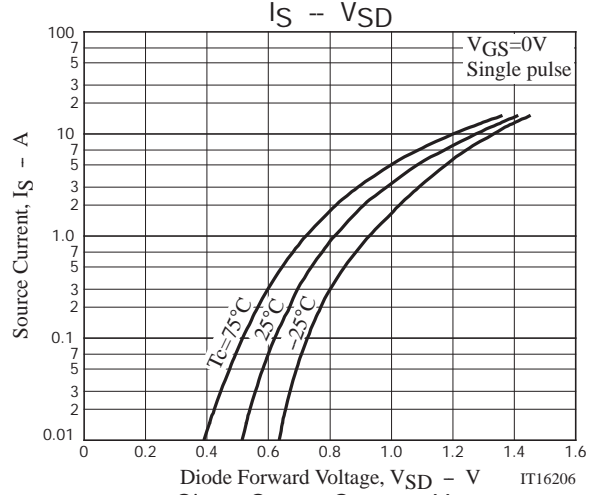
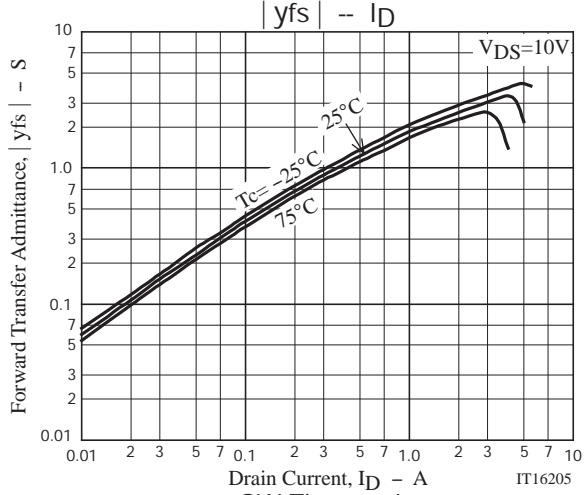
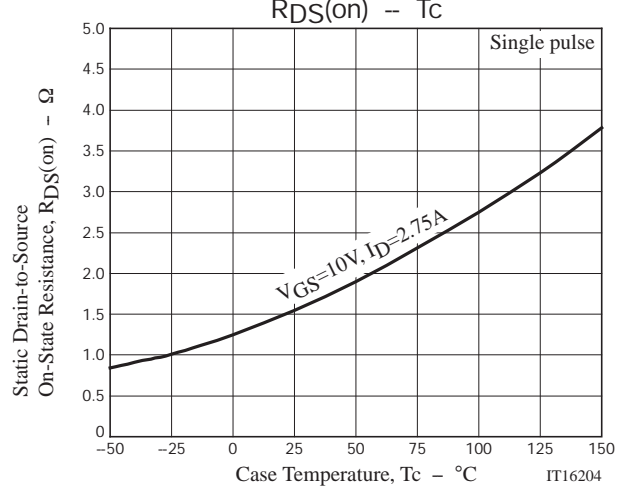
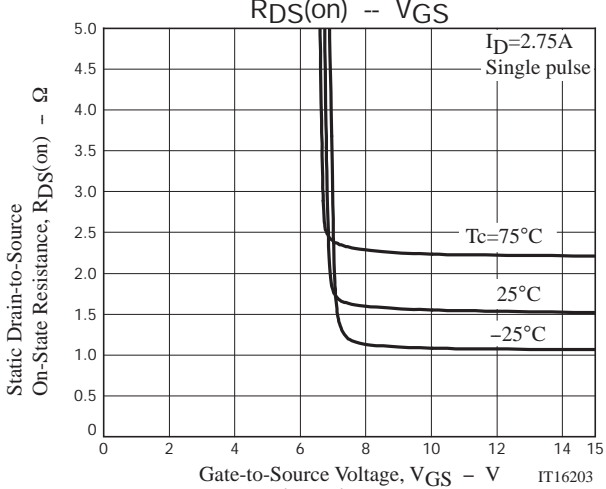
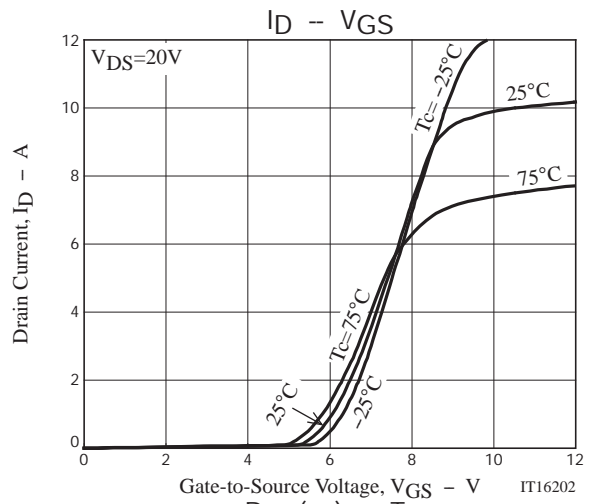
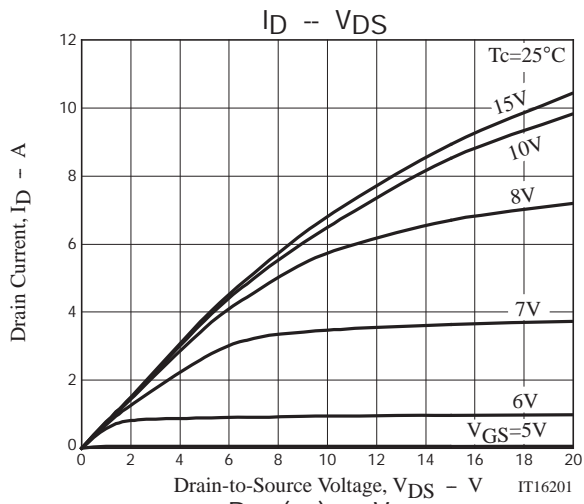
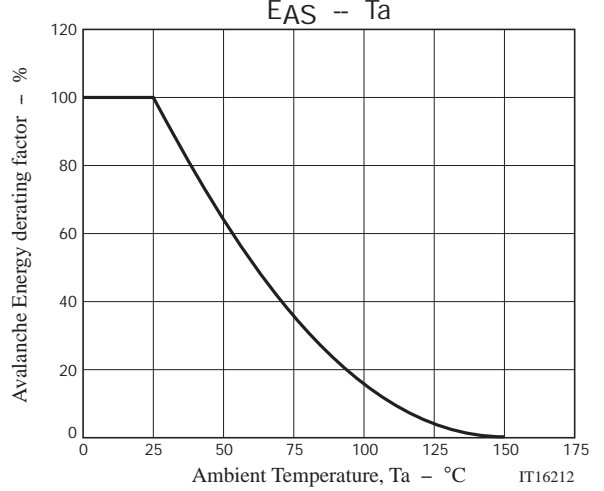
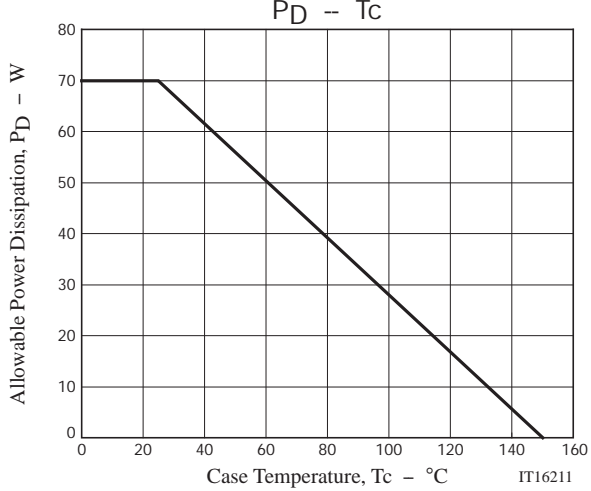
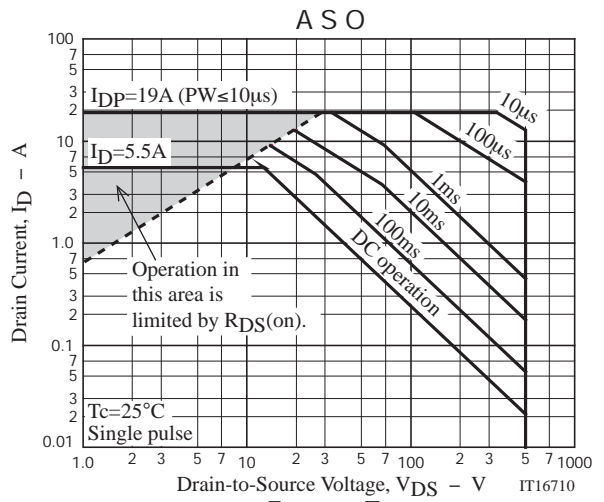
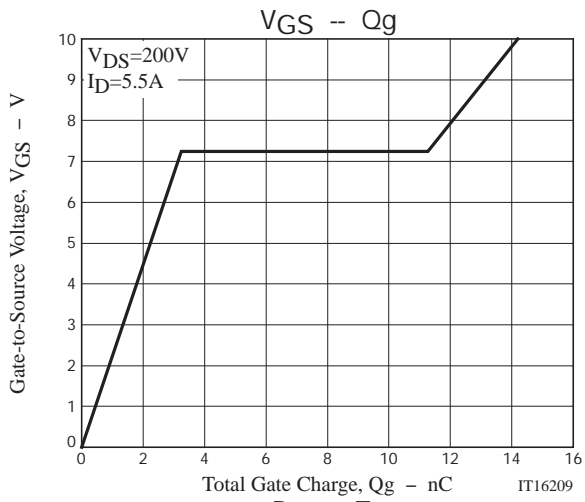


Fig.3 Reverse Recovery Time Resistance Test Circuit







Note on usage : Since the ATP613 is a MOSFET product, please avoid using this device in the vicinity of highly charged objects.

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