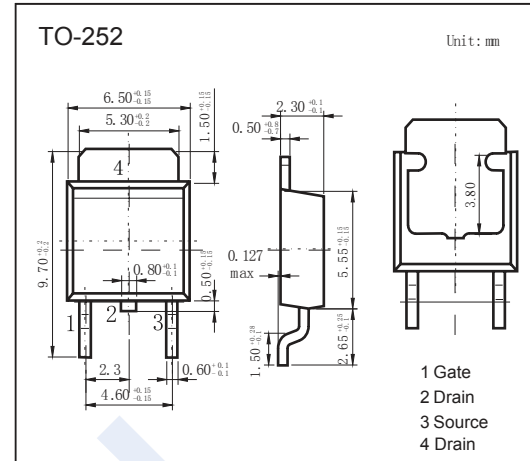
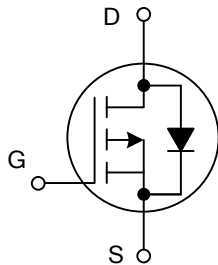


## P-Channel MOSFET

### NDT12P20

#### ■ Features

- $V_{DS} (V) = -20V$
- $I_D = -10 A$
- $R_{DS(ON)} < 150m\Omega$  ( $V_{GS} = -4.5V$ )
- $R_{DS(ON)} < 250m\Omega$  ( $V_{GS} = -2.5V$ )
- Gate Drive Capability: 2.5V



#### ■ Absolute Maximum Ratings $T_a = 25^\circ C$

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	-20	V
Gate-Source Voltage	$V_{GS}$	$\pm 12$	
Continuous Drain Current	$I_D$	-10	A
Pulsed Drain Current	$I_{DM}$	-24	
Power Dissipation	$P_D$	25	W
Linear Derating Factor		0.01	$W/^\circ C$
Thermal Resistance.Junction- to-Ambient	$R_{thJA}$	110	$^\circ C/W$
Thermal Resistance.Junction- to-Case	$R_{thJC}$	5	
Junction Temperature	$T_J$	150	$^\circ C$
Junction Storage Temperature Range	$T_{stg}$	-55 to 150	

## P-Channel MOSFET

### NDT12P20

#### ■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>DSS</sub>	I <sub>D</sub> =-250 μA, V <sub>GS</sub> =0V	-20			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =-20V, V <sub>GS</sub> =0V			-1	μA
Gate-Body leakage current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±12V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> I <sub>D</sub> =-250 μA	-0.5		-1.2	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =-4.5V, I <sub>D</sub> =-2.8A			150	mΩ
		V <sub>GS</sub> =-2.5V, I <sub>D</sub> =-2A			250	
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =-6V, f=1MHz		300		pF
Output Capacitance	C <sub>oss</sub>			180		
Reverse Transfer Capacitance	C <sub>rss</sub>			60		
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =-5V, V <sub>DS</sub> =-6V, I <sub>D</sub> =-2.8A (Note.1)		6		nC
Gate Source Charge	Q <sub>gs</sub>			1.5		
Gate Drain Charge	Q <sub>gd</sub>			0.6		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>DS</sub> =-6V, V <sub>GS</sub> =-5V, I <sub>D</sub> =-1A R <sub>G</sub> =6Ω, R <sub>D</sub> =6Ω (Note.1)		25		ns
Turn-On Rise Time	t <sub>r</sub>			60		
Turn-Off DelayTime	t <sub>d(off)</sub>			70		
Turn-Off Fall Time	t <sub>f</sub>			60		
Continuous Source Current ( Body Diode )	I <sub>S</sub>	V <sub>D</sub> =V <sub>G</sub> =0V, V <sub>S</sub> =-1.2V			-10	A
Pulsed Source Current ( Body Diode )	I <sub>SM</sub>				-24	
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =-10A, V <sub>GS</sub> =0V (Note.1)			-1.2	V

Note.1: Pulse width ≤300us, duty cycle ≤2%.

## P-Channel MOSFET NDT12P20

■ Typical Characteristics

