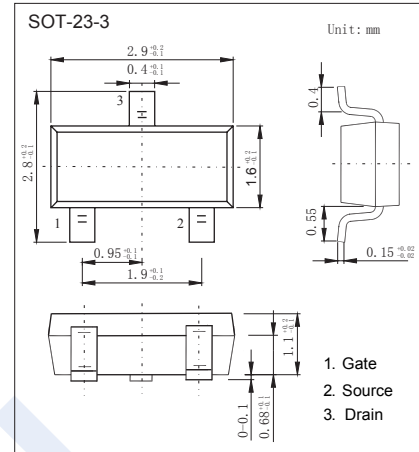
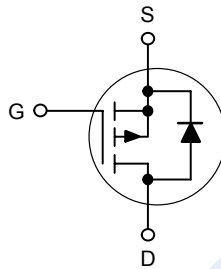


P-Channel MOSFET

NTR4101P (KTR4101P)

■ Features

- $V_{DS} (V) = -20V$
- $I_D = -3.2 A$
- $R_{DS(ON)} < 85m\Omega$ ($V_{GS} = -4.5V$)
- $R_{DS(ON)} < 120m\Omega$ ($V_{GS} = -2.5V$)
- $R_{DS(ON)} < 210m\Omega$ ($V_{GS} = -1.8V$)



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	± 8	V
Continuous Drain Current @Steady State (Note.1)	I_D	$T_a = 25^\circ C$	-2.4
		$T_a = 85^\circ C$	-1.7
Continuous Drain Current @ $t \leq 10s$ (Note.1)	I_D	$T_a = 25^\circ C$	-3.2
Power Dissipation (Note.1)	P_D	Steady State	0.73
		$t \leq 10s$	1.25
Continuous Drain Current (Note.2)	I_D	$T_a = 25^\circ C$	-1.8
		$T_a = 85^\circ C$	-1.3
Power Dissipation (Note.2)	P_D	0.42	W
Pulsed Drain Current	I_{DM}	$t_p = 10\mu s$	-7.5
ESD Capability (Note 3)	ESD	$C = 100 pF$ $R_s = 1500\Omega$	225
Thermal Resistance.Junction- to-Ambient (Note.1)	R_{thJA}	Steady State	170
		$t \leq 10s$	100
Thermal Resistance.Junction- to-Ambient (Note.2)	R_{thJA}	Steady State	300
Junction Temperature	T_J	150	$^\circ C$
Junction Storage Temperature Range	T_{stg}	-55 to 150	$^\circ C$

Note.1:Surface-mounted on FR4 board using 1 in sq pad size

Note.2:Surface-mounted on FR4 board using the minimum recommended pad size

Note.3:ESD Rating Information: HBM Class 0

P-Channel MOSFET

NTR4101P (KTR4101P)

■ Electrical Characteristics Ta = 25°C

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V _{DSS}	I _D =-250 μA, V _{GS} =0V	-20			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =-16V, V _{GS} =0V			-1	μA
Gate-Body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±8V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =-250 μA	-0.4		-1.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-1.6A			85	mΩ
		V _{GS} =-2.5V, I _D =-1.3A			120	
		V _{GS} =-1.8V, I _D =-0.9A			210	
Forward Transconductance	g _{FS}	V _{DS} =-5V, I _D =-2.3A	3			S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-10V, f=1MHz		675		pF
Output Capacitance	C _{oss}			100		
Reverse Transfer Capacitance	C _{rss}			75		
Gate resistance	R _g	V _{GS} =0V, V _{DS} =0V, f=1MHz		6.5		Ω
Total Gate Charge	Q _g	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-1.6A		7.5	8.5	nC
Gate Source Charge	Q _{gs}			1.2		
Gate Drain Charge	Q _{gd}			2.2		
Turn-On DelayTime	t _{d(on)}	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-1.6A, R _G =6Ω		7.5		ns
Turn-On Rise Time	t _r			12.6		
Turn-Off DelayTime	t _{d(off)}			30.2		
Turn-Off Fall Time	t _f			21		
Turn-On Delay Time	t _{rr}			12.8	15	
Reverse Recovery Time	t _a	I _F =-1.6A, di/dt=100A/us, V _{GS} =0		9.9		ns
Discharge Time	t _b			3		
Reverse Recovery Charge	Q _{rr}			1008		nC
Maximum Body-Diode Continuous Current	I _S				-2.4	A
Diode Forward Voltage	V _{SD}	I _S =-2.4A, V _{GS} =0V			-1.2	V

Note.Pulse Test: Pulse Width ≤ 300us, Duty Cycle ≤ 2%.

■ Marking

Marking	TR4
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P-Channel MOSFET NTR4101P (KTR4101P)

■ Typical Characteristics

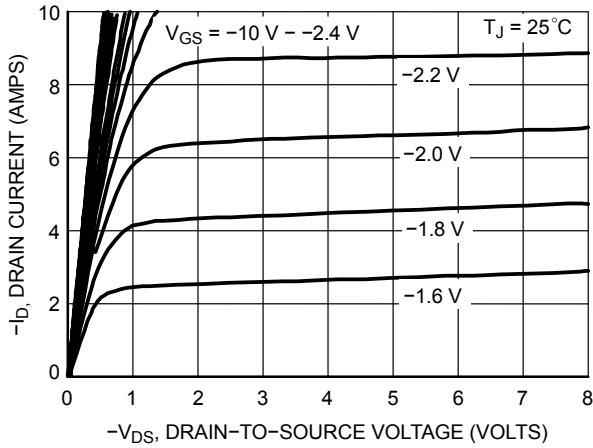


Figure 1. On-Region Characteristics

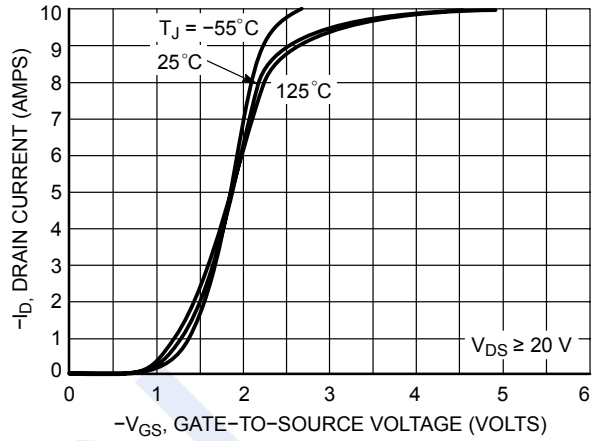


Figure 2. Transfer Characteristics

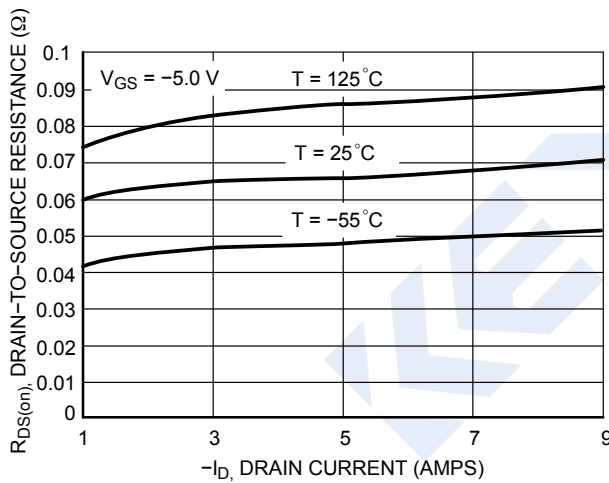


Figure 3. On-Resistance vs. Drain Current and Temperature

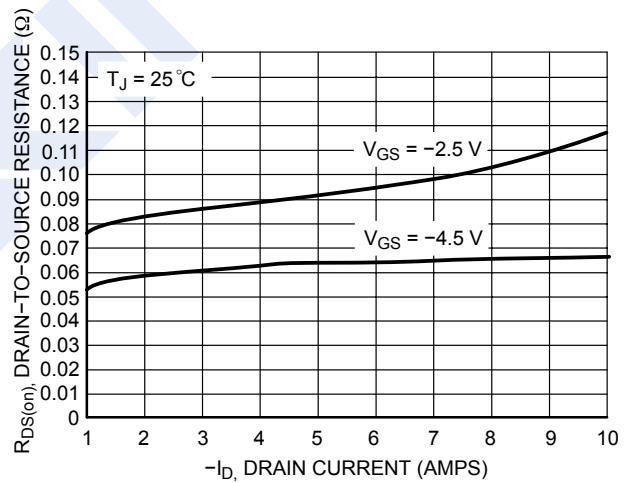


Figure 4. On-Resistance vs. Drain Current and Temperature

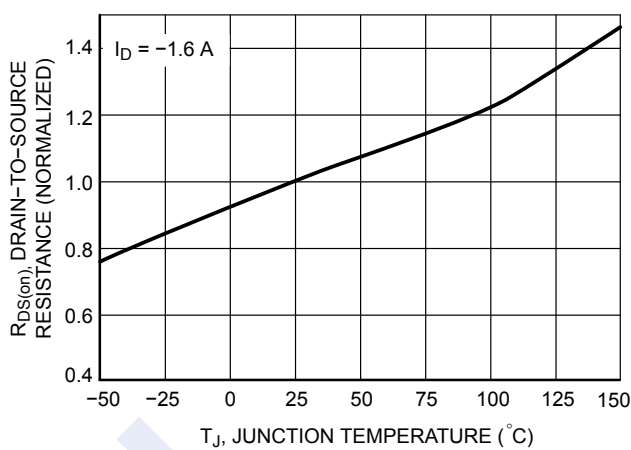


Figure 5. On-Resistance Variation with Temperature

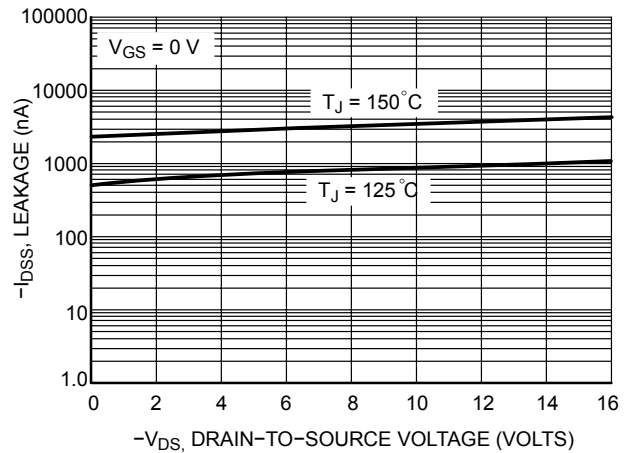


Figure 6. Drain-to-Source Leakage Current vs. Voltage

P-Channel MOSFET NTR4101P (KTR4101P)

■ Typical Characteristics

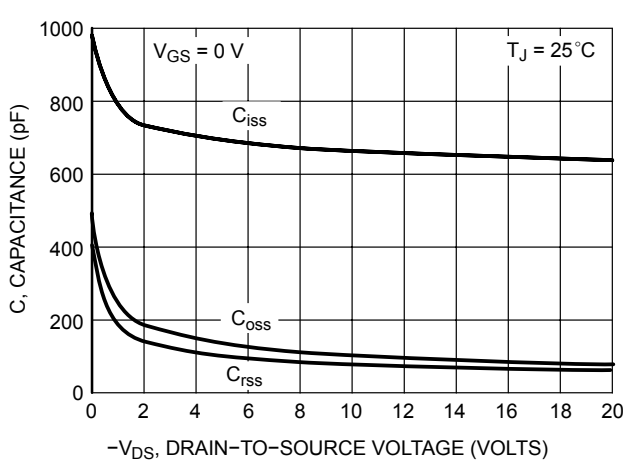


Figure 7. Capacitance Variation

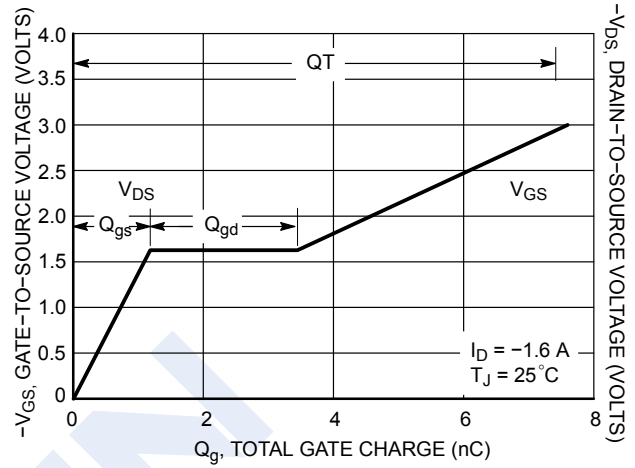


Figure 8. Gate-to-Source and Drain-to-Source Voltage vs. Total Gate Charge

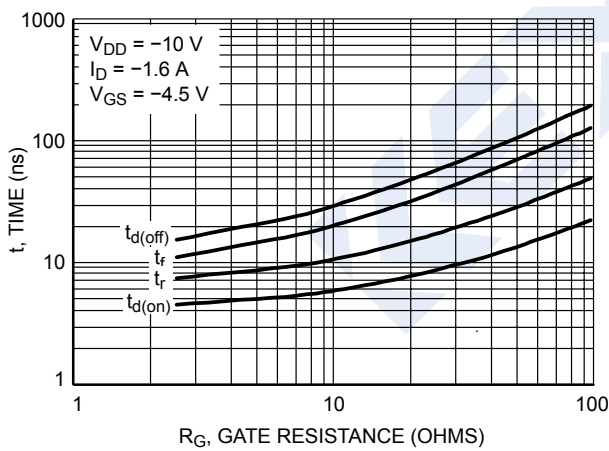


Figure 9. Resistive Switching Time Variation vs. Gate Resistance

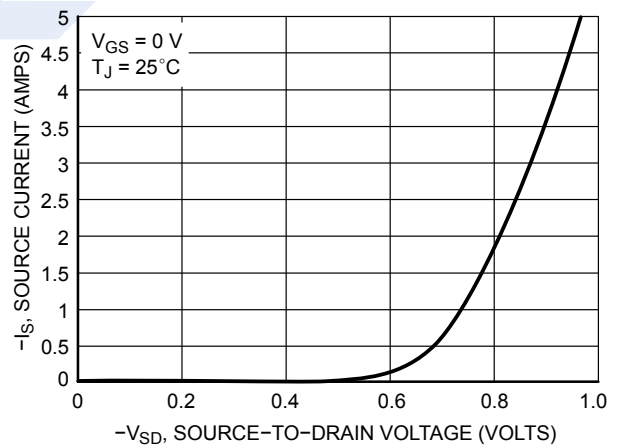


Figure 10. Diode Forward Voltage vs. Current