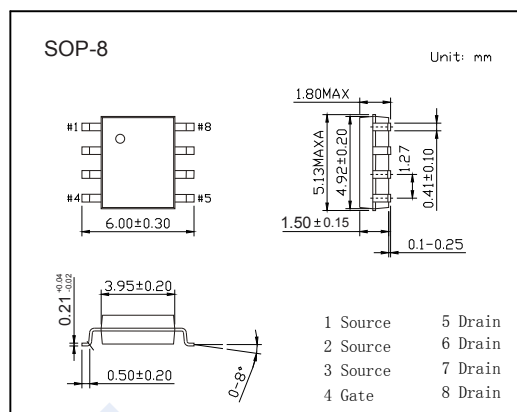
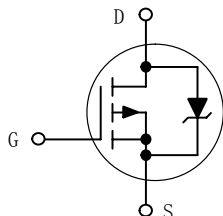


P-Channel MOSFET

NTMS10P02R2 (KTMS10P02R2)

■ Features

- $V_{DS}(V) = -20V$
- $I_D = -10 A$ ($V_{GS} = -10V$)
- $R_{DS(ON)} < 14 m\Omega$ ($V_{GS} = -4.5V$)
- $R_{DS(ON)} < 20 m\Omega$ ($V_{GS} = -2.5V$)
- Diode Exhibits High Speed, Soft Recovery



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

Parameter		Symbol	10 seconds	steady state	Unit
Drain-Source Voltage		V _{DS}	-20		V
Gate-Source Voltage		V _{GS}	± 12		
Continuous Drain Current	T _a = 25°C	I _D	-10	-8.8	A
	T _a = 70°C		-8	-6.4	
Maximum Operating Drain Current			-5.5	-4.5	
Pulsed Drain Current (Note.1)		I _{DM}	-50	-44	
Power Dissipation	T _a = 25°C	P _D	2.5	1.6	W
Maximum Operating Power Dissipation			0.6	0.4	
Avalanche Energy (Note.2)	T _J = 25°C	E _{AS}	500		mJ
Thermal Resistance.Junction- to-Ambient		R _{thJA}	50	80	°C/W
Junction Temperature		T _J	150		°C
Lead Temperature for Soldering Purposes		T _L	260		
Junction Storage Temperature Range		T _{stg}	-55 to 150		

Note.1: Pulse Test: Pulse Width $< 300\mu s$, Duty Cycle $< 2\%$.

Note.2: $V_{DD} = -20 V$, $V_{GS} = -4.5V$, Peak $I_L = 5A$, $L = 40 mH$, $R_G = 25\Omega$

P-Channel MOSFET

NTMS10P02R2 (KTMS10P02R2)

■ 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} =-20V, V _{GS} =0V, T _J =25°C			-1	μA
		V _{DS} =-20V, V _{GS} =0V, T _J =70°C			-5	
Gate-Body leakage current	I _{GSS}	V _{DS} =0V, V _{GS} =±12V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} I _D =-250 μA	-0.6		-1.2	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =-4.5V, I _D =-10A			14	mΩ
		V _{GS} =-2.5V, I _D =-8.8A			20	
Forward Transconductance	g _{FS}	V _{DS} =-10V, I _D =-10A		30		S
Input Capacitance	C _{iss}	V _{GS} =0V, V _{DS} =-16V, f=1MHz		3100	3640	pF
Output Capacitance	C _{oss}			1100	1670	
Reverse Transfer Capacitance	C _{rss}			475	1010	
Total Gate Charge	Q _g	V _{GS} =-4.5V, V _{DS} =-10V, I _D =-10A		48	70	nC
Gate Source Charge	Q _{gs}			6.5		
Gate Drain Charge	Q _{gd}			17		
Turn-On DelayTime	t _{d(on)}	V _{GS} =-4.5V, V _{DS} =-10V, I _D =1A, R _G =6 Ω		25	35	ns
Turn-On Rise Time	t _r			40	65	
Turn-Off DelayTime	t _{d(off)}			110	190	
Turn-Off Fall Time	t _f			110	190	
Turn-On DelayTime	t _{d(on)}	V _{GS} =-4.5V, V _{DS} =-10V, I _D =10A, R _G =6 Ω		25		
Turn-On Rise Time	t _r			100		
Turn-Off DelayTime	t _{d(off)}			100		
Turn-Off Fall Time	t _f			125		
Body Diode Reverse Recovery Time	t _{rr}	I _F =-2.1A, V _{GS} =0, di/dt=100A/μs		65	100	ns
	t _a			25		
	t _b			40		
Body Diode Reverse Recovery Charge	Q _{rr}			75		nC
Maximum Body-Diode Continuous Current	I _S				-10	A
Diode Forward Voltage	V _{SD}	I _S =-2.1A, V _{GS} =0V		-0.72	-1.2	V
		I _S =-2.1A, V _{GS} =0V, T _J =125°C		-0.6		
		I _S =-10A, V _{GS} =0V		-0.9		
		I _S =-10A, V _{GS} =0V, T _J =125°C		-0.75		

■ Marking

Marking	10P02 KC****
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P-Channel MOSFET

NTMS10P02R2 (KTMS10P02R2)

■ Typical Characteristics

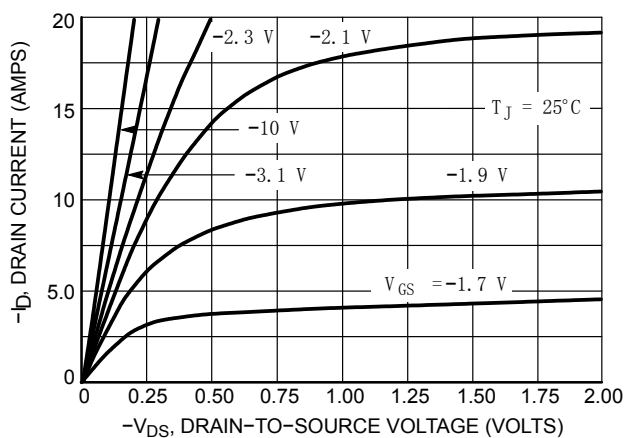


Figure 1. On-Region Characteristics

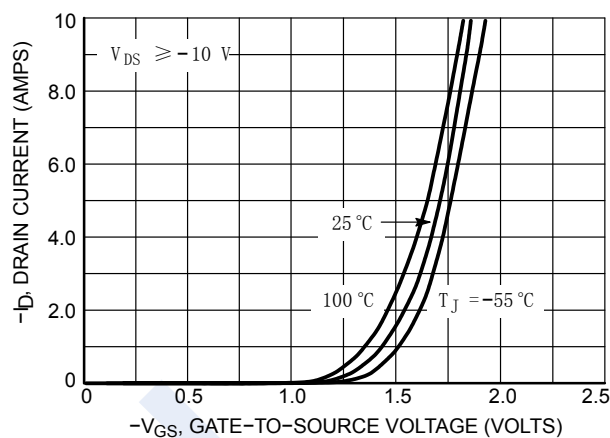


Figure 2. Transfer Characteristics

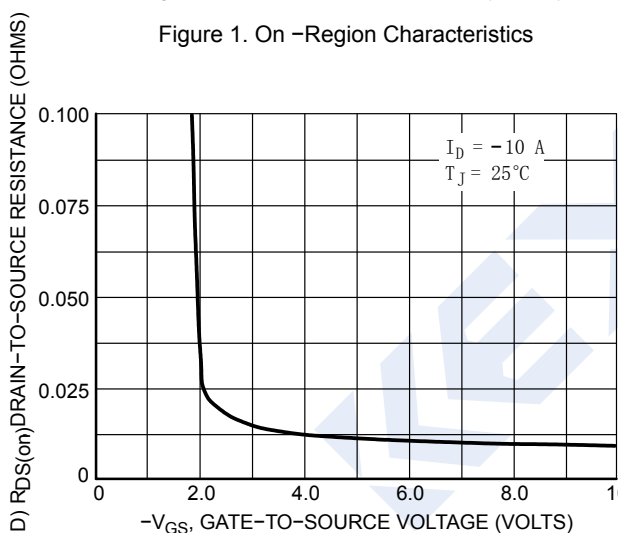


Figure 3. On-Resistance versus Gate-To-Source Voltage

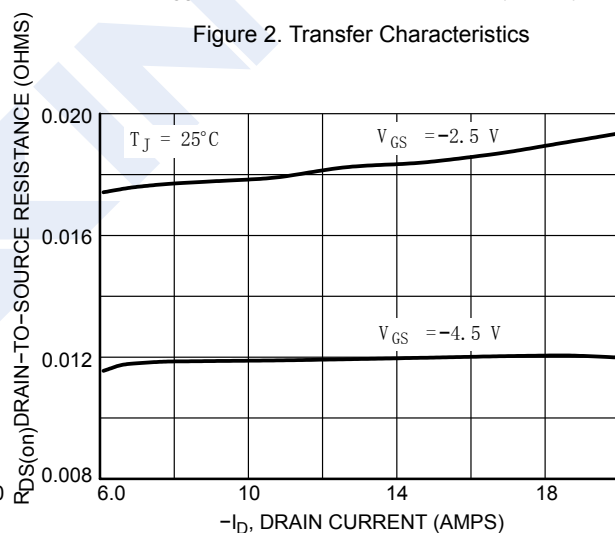


Figure 4. On-Resistance versus Drain Current and Gate Voltage

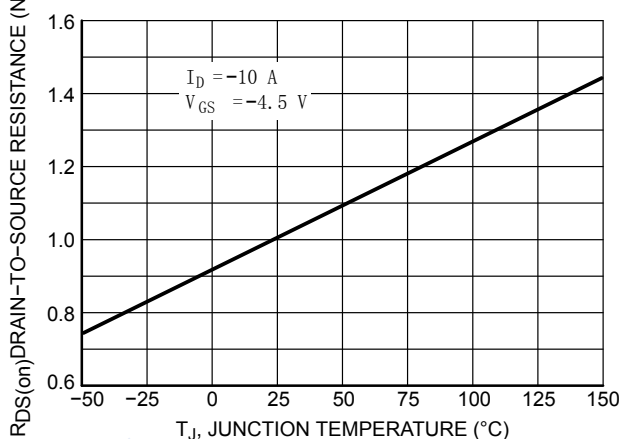


Figure 5. On-Resistance Variation with Temperature

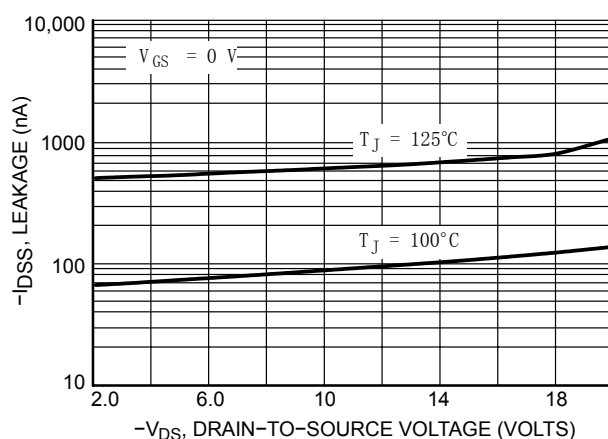
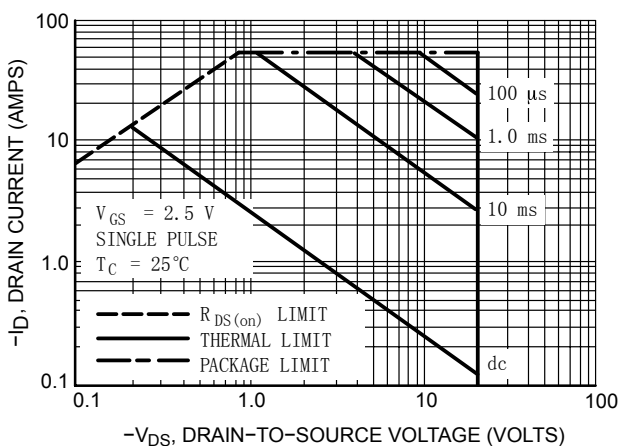
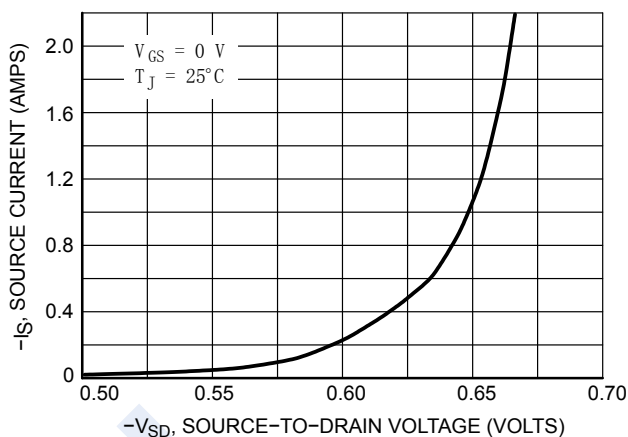
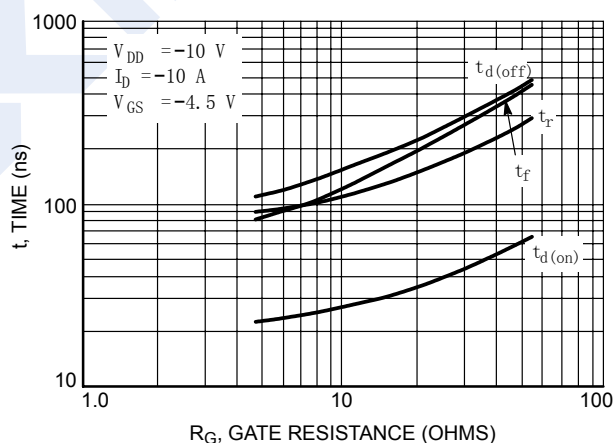
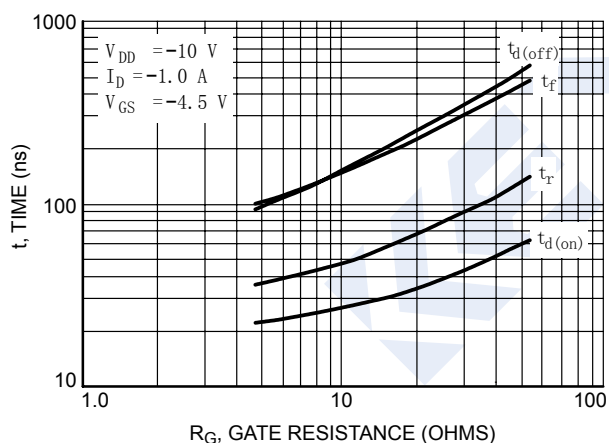
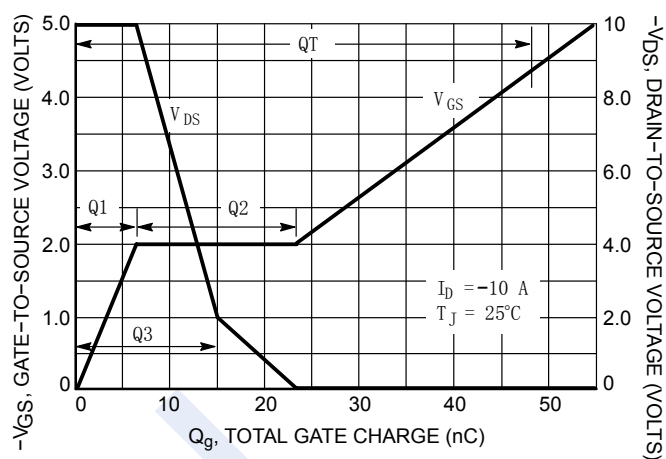
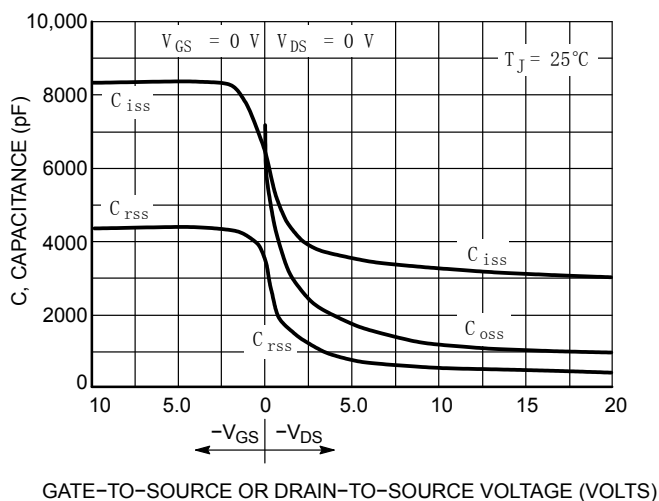


Figure 6. Drain-To-Source Leakage Current versus Voltage

P-Channel MOSFET

NTMS10P02R2 (KTMS10P02R2)

■ Typical Characteristics



P-Channel MOSFET

NTMS10P02R2 (KTMS10P02R2)

■ Typical Characteristics

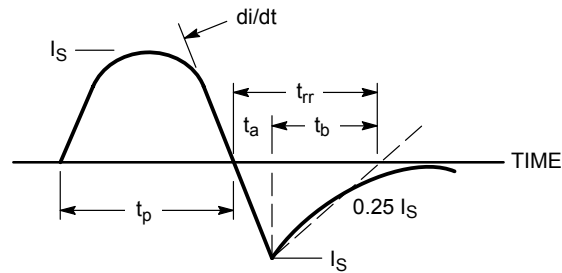


Figure 13. Diode Reverse Recovery Waveform

TYPICAL ELECTRICAL CHARACTERISTICS

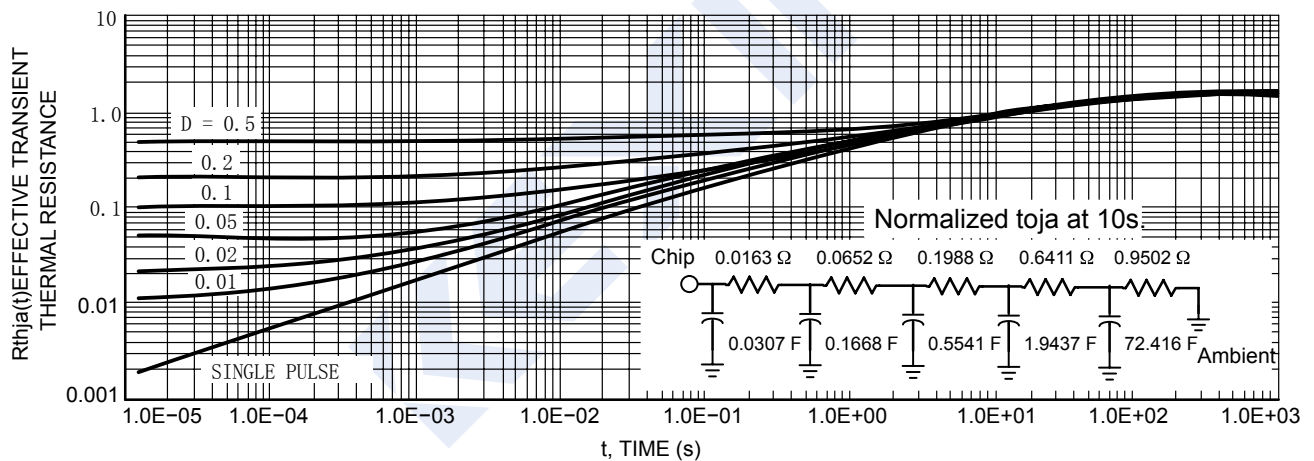


Figure 14. Thermal Response