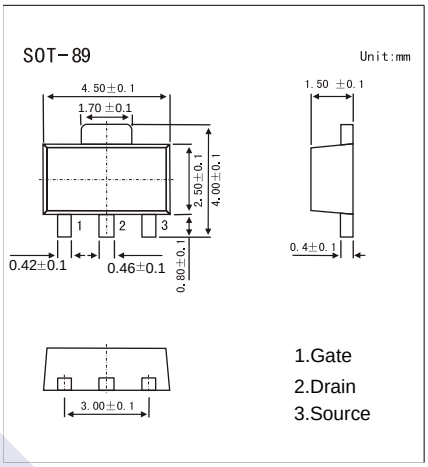
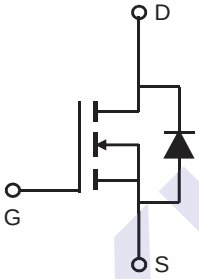
N-Channel MOSFET

KI3N10

■ Features

- $V_{DS\ (V)}$ = 100V
- I_D = 3 A
- $R_{DS(ON)}$ < 160 mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 170 mΩ (V_{GS} = 4.5V)





■ Absolute Maximum Ratings (T_A = 25℃ unless otherwise noted)

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current	I_D	3	A
Pulsed Drain Current (Note 1)	I_{DM}	20	
Power Dissipation	P_D	1.5	W
Thermal Resistance.Junction- to-Ambient (Note 2)	R_{thJA}	100	℃/W
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{stg}	-55 to 150	

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■ Electrical Characteristics (T_A = 25℃ unless otherwise noted)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	100			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=100V, V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage (Note 3)	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	1		3	V
Static Drain-Source On-Resistance (Note 3)	$R_{DS(ON)}$	V_{GS}=10V, I_D=3A			160	mΩ
		V_{GS}=4.5V, I_D=3A			170	
Forward Transconductance (Note 3)	g_{FS}	V_{DS}=5V, I_D=3A		5		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz (Note 4)		650		pF
Output Capacitance	C_{oss}			24		
Reverse Transfer Capacitance	C_{rss}			20		
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=50V, I_D=3A (Note 4)		20		nC
Gate Source Charge	Q_{gs}			2.1		
Gate Drain Charge	Q_{gd}			3.3		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=10V, V_{DD}=50V, R_L=19Ω, R_G=3Ω (Note 4)		6		ns
Turn-On Rise Time	t_r			4		
Turn-Off DelayTime	$t_{d(off)}$			20		
Turn-Off Fall Time	t_f			4		
Body-Diode Forward Current (Note 2)	I_S				3	A
Diode Forward Voltage (Note 3)	V_{SD}	I_S=3A,V_{GS}=0V			1.2	V

Notes:

1. Repetitive Rating: Pulse width limited by maximum junction temperature.
2. Surface Mounted on FR4 Board, t ⩽ 10 sec.
3. Pulse Test: Pulse Width ⩽ 300μs, Duty Cycle ⩽ 2%.
4. Guaranteed by design, not subject to production.

■ Marking

Marking	3N10

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■ Typical Characterisitics and Thermal Characteristics (Curves)

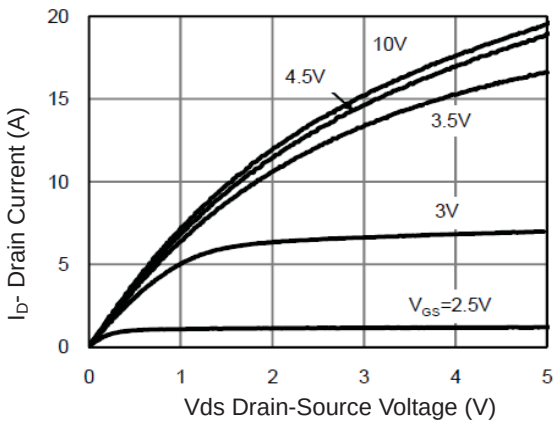

Figure 1 Output Characteristics

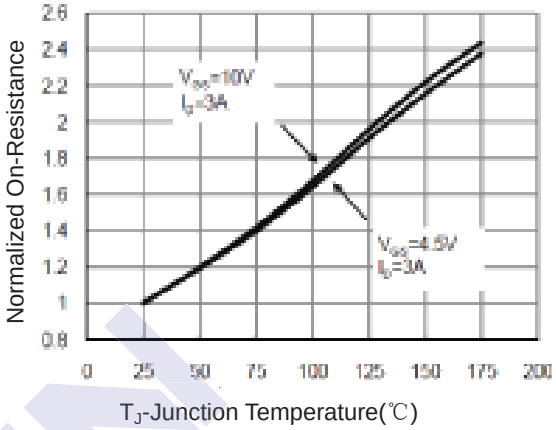

Figure 4 Rdson-JunctionTemperature

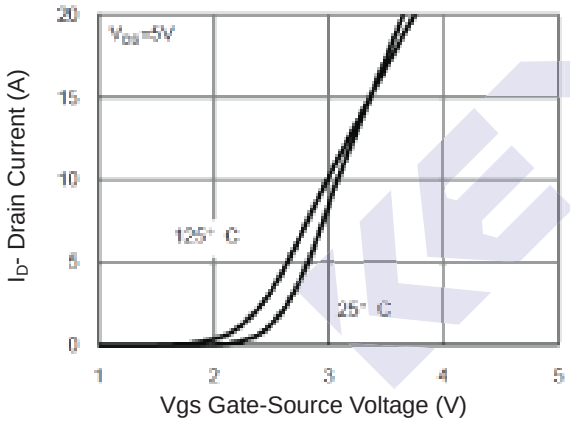

Figure 2 Transfer Characteristics

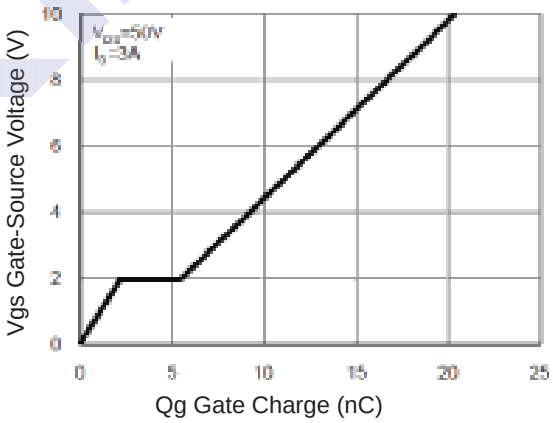

Figure 5 Gate Charge

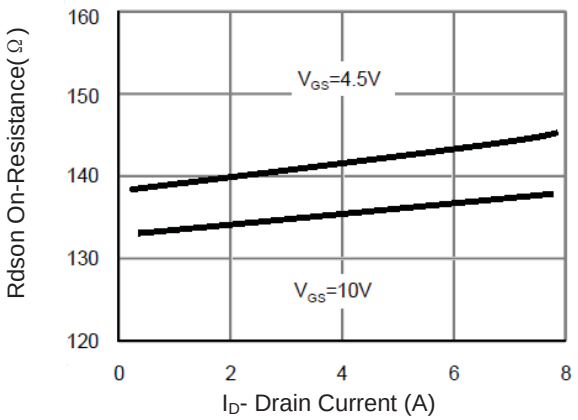

Figure 3 Rdson- Drain Current

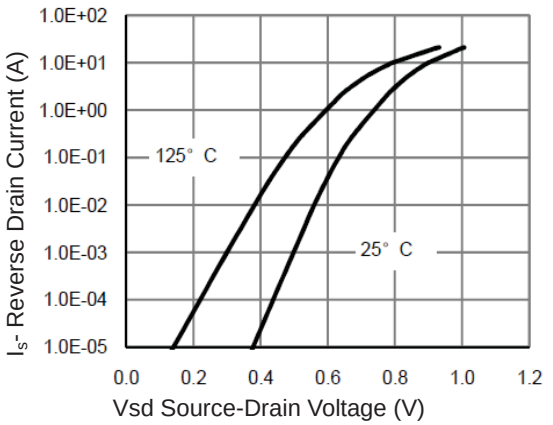

Figure 6 Source- Drain Diode Forward

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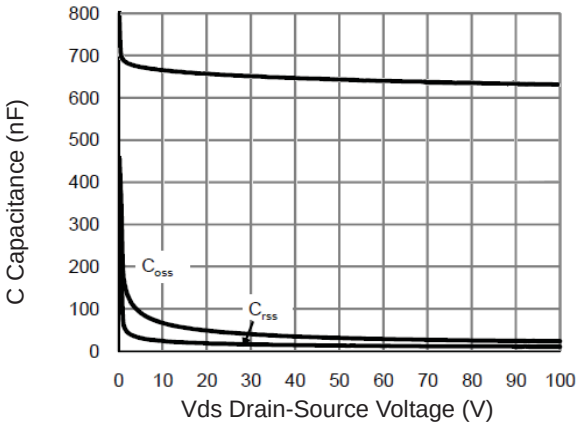

Figure 7 Capacitance vs Vds

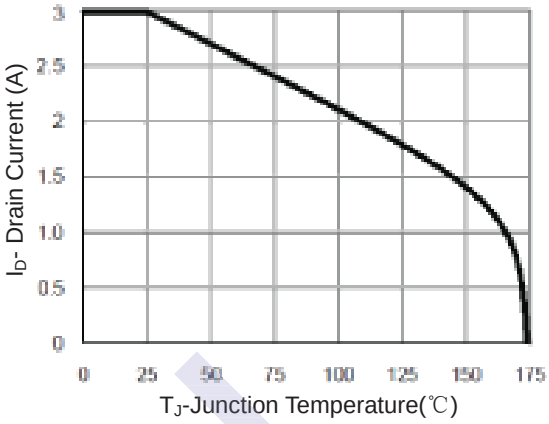

Figure 9 BV_{DSS} vs Junction Temperature

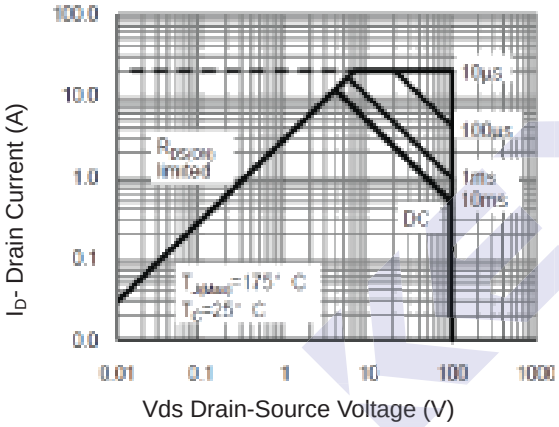

Figure 8 Safe Operation Area

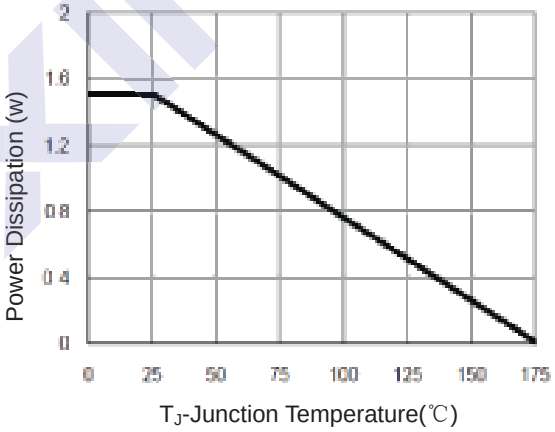

Figure 10 Power De-rating

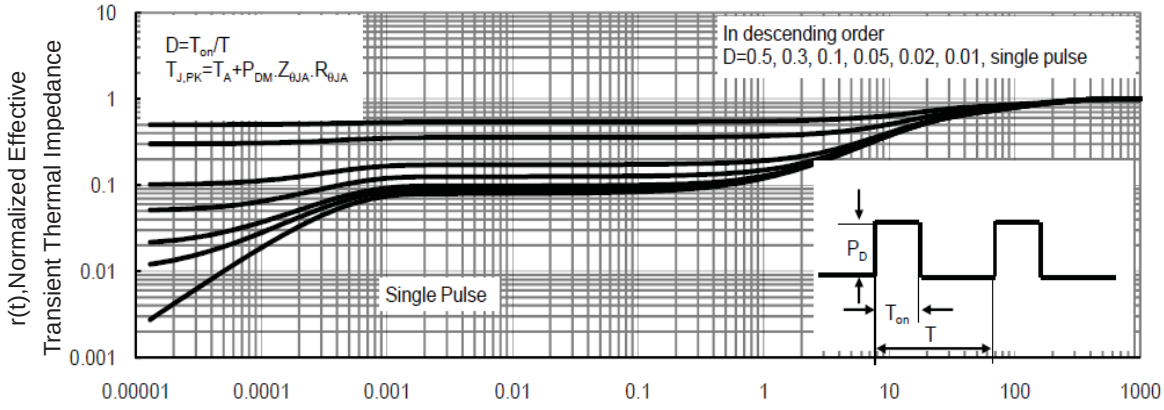

Figure 11 Normalized Maximum Transient Thermal Impedance