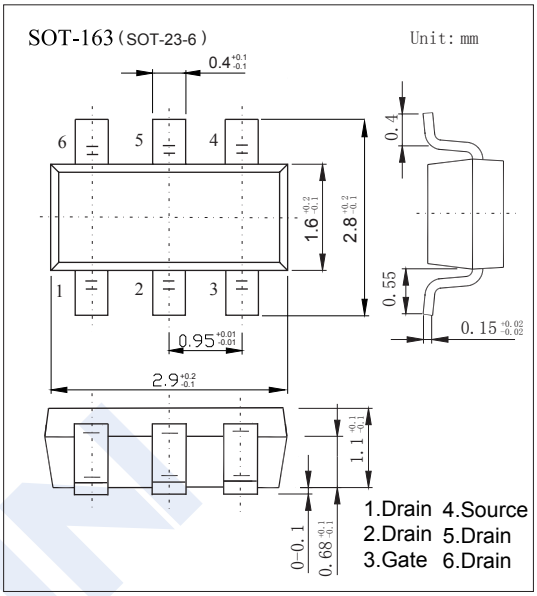
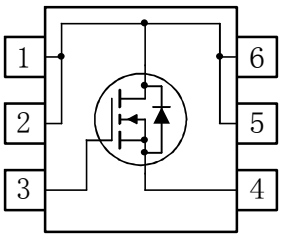
N-Channel MOSFET

FDC3612 (KDC3612)



■ Features

- $V_{DS\ (V)}$ = 100V
- I_D = 2.6 A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 125mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 135mΩ (V_{GS} = 6V)
- Fast switching speed



■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	100	V
Gate-Source Voltage	V_{GS}	±20	
Continuous Drain Current (Note.1)	I_D	2.6	A
Pulsed Drain Current	I_{DM}	20	
Drain-Source Avalanche Current	I_{AR}	2.6	
Power Dissipation (Note.1)	P_D	1.6	W
(Note.2)		0.8	
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	78	°C/W
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	30	
Junction Temperature	T_J	150	℃
Storage Temperature Range	T_{stg}	-55 to 150	

Note.1: 78°C/W when mounted on a 1in² pad of 2oz copper on FR-4 board.

Note.2: 156°C/W when mounted on a minimum pad.

N-Channel MOSFET

FDC3612 (KDC3612)

■ Electrical Characteristics Ta = 25℃

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}=80V, V_{GS}=0V			10	μA
Gate-Body Leakage Current	I_{GSS}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	2		4	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=10V, I_D=2.6A			125	mΩ
		V_{GS}=10V, I_D=2.6A T_J=125℃			240	
		V_{GS}=6V, I_D=2.5A			135	
On State Drain Current	$I_{D(ON)}$	V_{GS}=10V, V_{DS}=5V	10			A
Forward Transconductance	g_{FS}	V_{DS}=10V, I_D=2.6A		10		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=50V, f=1MHz		660		pF
Output Capacitance	C_{oss}			55		
Reverse Transfer Capacitance	C_{rss}			40		
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=50V, I_D=2.6A (Note.1)		14	20	nC
Gate Source Charge	Q_{gs}			2.3		
Gate Drain Charge	Q_{gd}			3.6		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=10V, V_{DS}=50V, I_D=1A,R_G=6Ω (Note.1)		6	11	ns
Turn-On Rise Time	t_r			3.5	7	
Turn-Off DelayTime	$t_{d(off)}$			23	37	
Turn-Off Fall Time	t_f			3.7	7.4	
Body Diode Reverse Recovery Time	t_{rr}	I_F= 2.6A, dI/dt= 100A/μs		31		
Body Diode Reverse Recovery Charge	Q_{rr}			56		nC
Drain-Source Avalanche Energy	W_{DSS}	Single Pulse,V_{DD}=50V, I_D=2.6A (Note.1)			90	mJ
Maximum Body-Diode Continuous Current	I_S				1.3	A
Diode Forward Voltage	V_{SD}	I_S=1.3A,V_{GS}=0V			1.2	V

Note.1:Pulse Test: Pulse Width ≤ 300 μs, Duty Cycle ≤ 2.0%

■ Marking

Marking	3612

N-Channel MOSFET

FDC3612 (KDC3612)

■ Typical Characterisitics

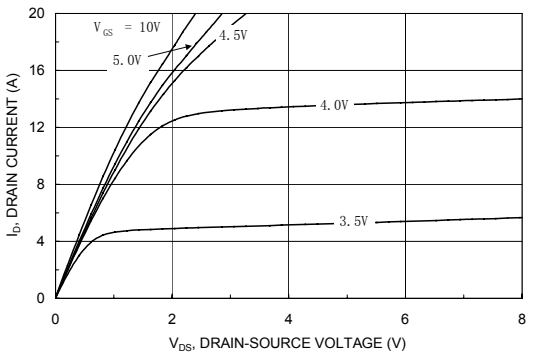


Figure 1. On-Region Characteristics.

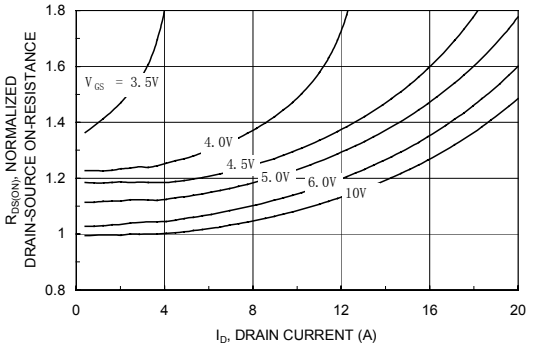


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

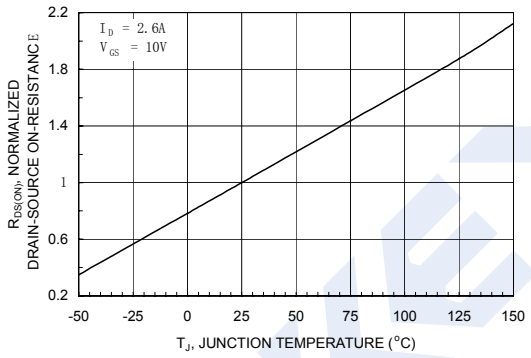


Figure 3. On-Resistance Variation with Temperature.

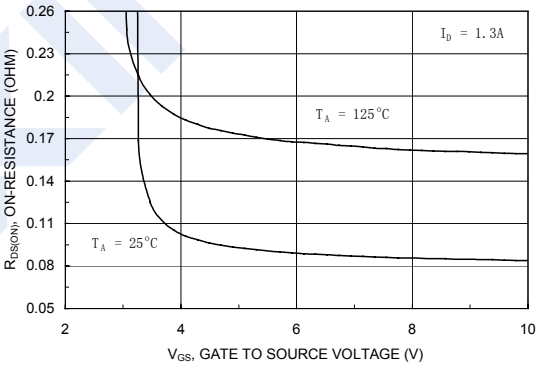


Figure 4. On-Resistance Variation with Gate-to-Source Voltage.

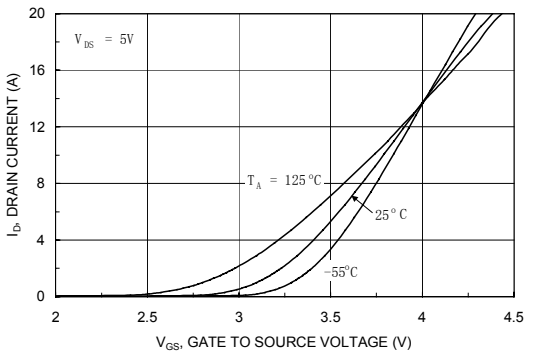


Figure 5. Transfer Characteristics.

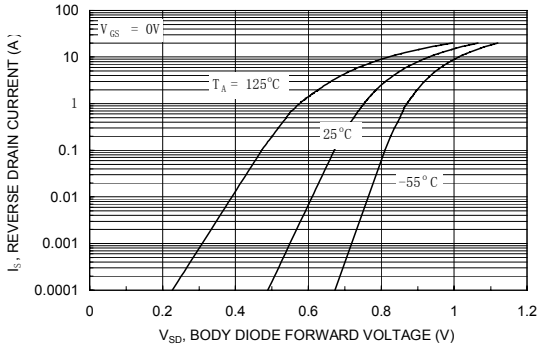


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.

N-Channel MOSFET

FDC3612 (KDC3612)

■ Typical Characterisitics

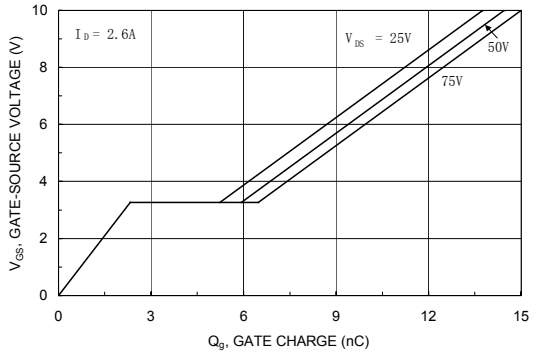


Figure 7. Gate Charge Characteristics.

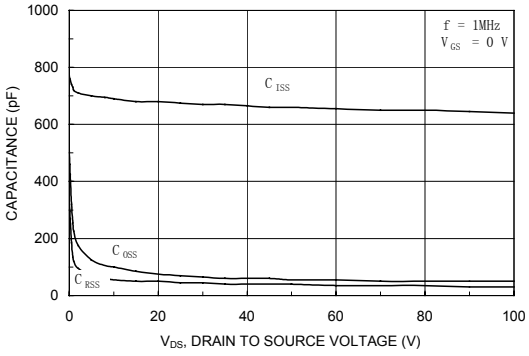


Figure 8. Capacitance Characteristics.

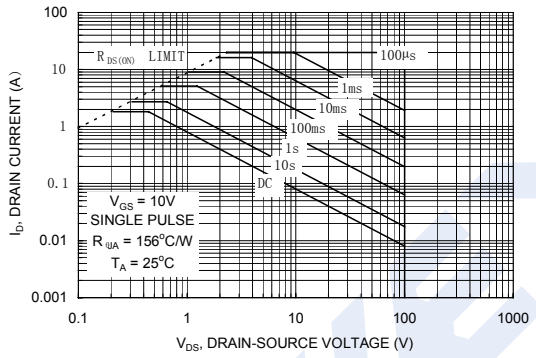


Figure 9. Maximum Safe Operating Area.

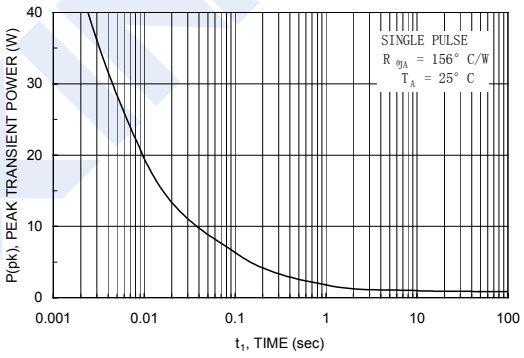


Figure 10. Single Pulse Maximum Power Dissipation.

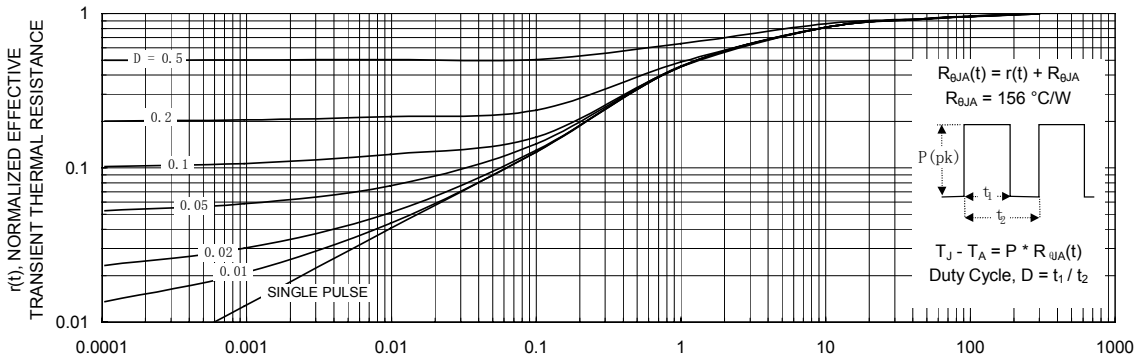


Figure 11. Transient Thermal Response Curve.

Thermal characterization performed using the conditions described in Note 1b.
Transient thermal response will change depending on the circuit board design.