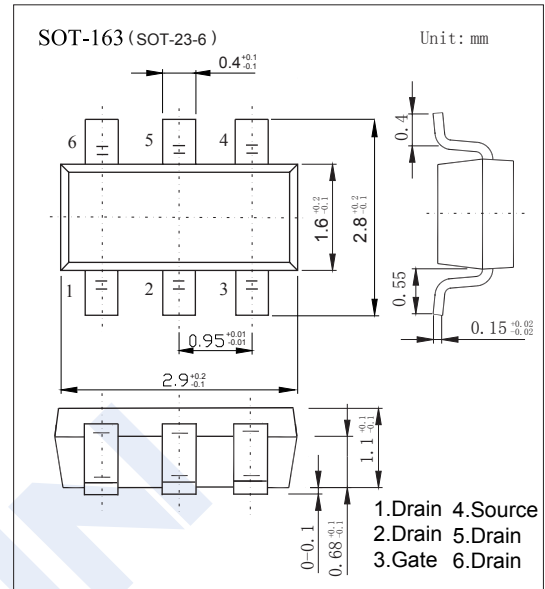
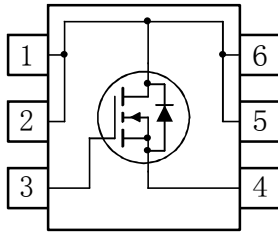


## N-Channel MOSFET

### FDC3612-HF

#### ■ Features

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



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

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DS}$	100	V
Gate-Source Voltage	$V_{GS}$	$\pm 20$	
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	$^\circ C/W$
Thermal Resistance, Junction-to-Case	$R_{\theta JC}$	30	
Junction Temperature	$T_J$	150	$^\circ C$
Storage Temperature Range	$T_{stg}$	-55 to 150	

Note.1:  $78^\circ C/W$  when mounted on a  $1in^2$  pad of 2oz copper on FR-4 board.

Note.2:  $156^\circ C/W$  when mounted on a minimum pad.

## N-Channel MOSFET

### FDC3612-HF

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

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V <sub>bss</sub>	I <sub>D</sub> =250 μA, V <sub>GS</sub> =0V	100			V
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> =80V, V <sub>GS</sub> =0V			10	μA
Gate-Body Leakage Current	I <sub>GSS</sub>	V <sub>DS</sub> =0V, V <sub>GS</sub> =±20V			±100	nA
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> =V <sub>GS</sub> , I <sub>D</sub> =250 μA	2		4	V
Static Drain-Source On-Resistance	R <sub>DS(on)</sub>	V <sub>GS</sub> =10V, I <sub>D</sub> =2.6A			125	mΩ
		V <sub>GS</sub> =10V, I <sub>D</sub> =2.6A T <sub>J</sub> =125°C			240	
		V <sub>GS</sub> =6V, I <sub>D</sub> =2.5A			135	
On State Drain Current	I <sub>D(ON)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =5V	10			A
Forward Transconductance	g <sub>FS</sub>	V <sub>DS</sub> =10V, I <sub>D</sub> =2.6A		10		S
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> =0V, V <sub>DS</sub> =50V, f=1MHz		660		pF
Output Capacitance	C <sub>oss</sub>			55		
Reverse Transfer Capacitance	C <sub>rss</sub>			40		
Total Gate Charge	Q <sub>g</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, I <sub>D</sub> =2.6A (Note.1)		14	20	nC
Gate Source Charge	Q <sub>gs</sub>			2.3		
Gate Drain Charge	Q <sub>gd</sub>			3.6		
Turn-On DelayTime	t <sub>d(on)</sub>	V <sub>GS</sub> =10V, V <sub>DS</sub> =50V, I <sub>D</sub> =1A, R <sub>G</sub> =6 Ω (Note.1)		6	11	ns
Turn-On Rise Time	t <sub>r</sub>			3.5	7	
Turn-Off DelayTime	t <sub>d(off)</sub>			23	37	
Turn-Off Fall Time	t <sub>f</sub>			3.7	7.4	
Body Diode Reverse Recovery Time	t <sub>rr</sub>			31		
Body Diode Reverse Recovery Charge	Q <sub>rr</sub>	I <sub>F</sub> = 2.6A, di/dt= 100A/μs		56		nC
Drain-Source Avalanche Energy	W <sub>DSS</sub>	Single Pulse, V <sub>DD</sub> =50V, I <sub>D</sub> =2.6A (Note.1)			90	mJ
Maximum Body-Diode Continuous Current	I <sub>S</sub>				1.3	A
Diode Forward Voltage	V <sub>SD</sub>	I <sub>S</sub> =1.3A, V <sub>GS</sub> =0V			1.2	V

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

#### ■ Marking

Marking	3612
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## N-Channel MOSFET FDC3612-HF

### Typical Characteristics

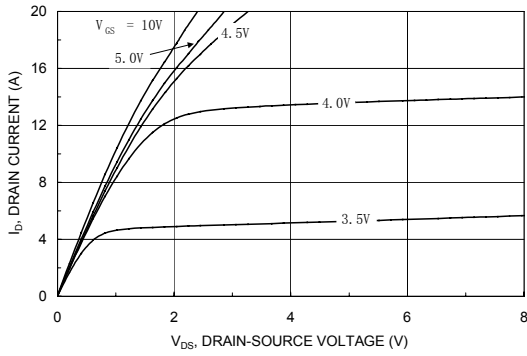


Figure 1. On-Region Characteristics.

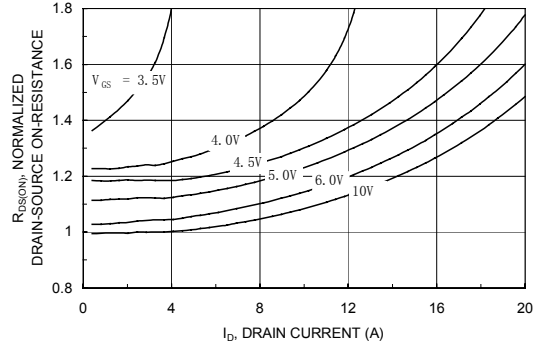


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

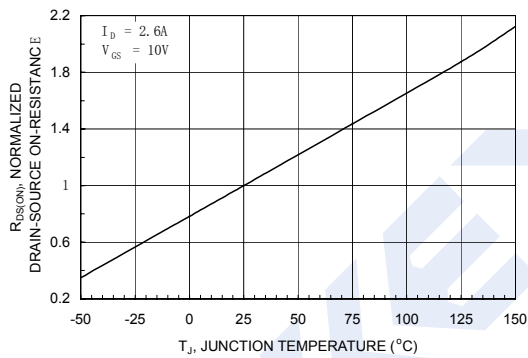


Figure 3. On-Resistance Variation with Temperature.

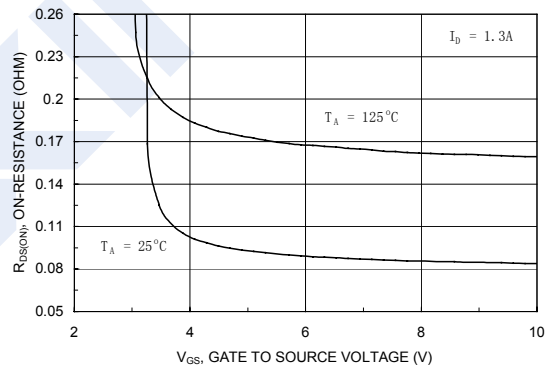


Figure 4. On-Resistance Variation with Gate-to-Source Voltage.

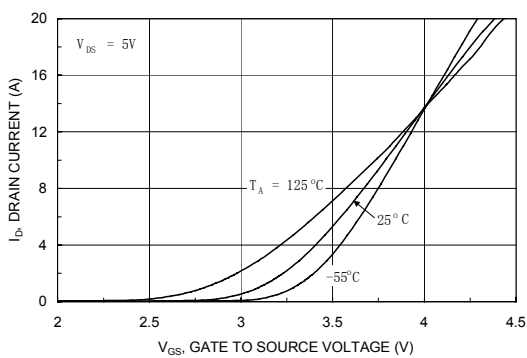


Figure 5. Transfer Characteristics.

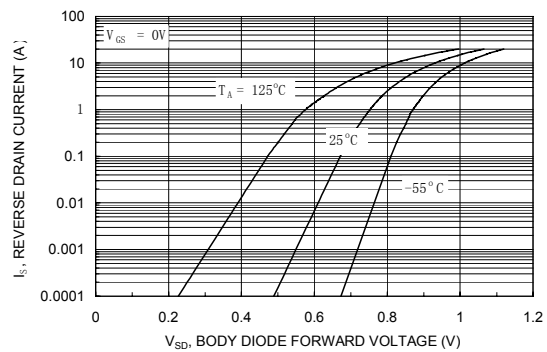


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.

## N-Channel MOSFET FDC3612-HF

■ Typical Characteristics

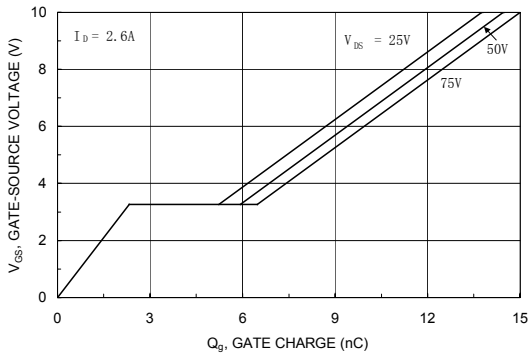


Figure 7. Gate Charge Characteristics.

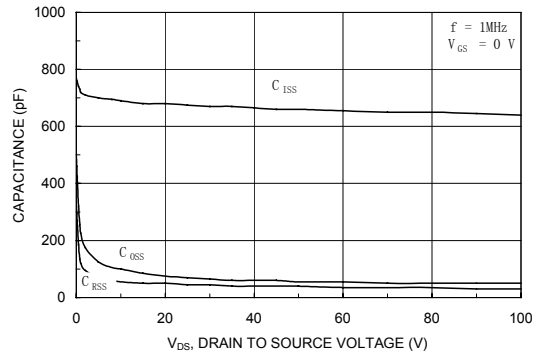


Figure 8. Capacitance Characteristics.

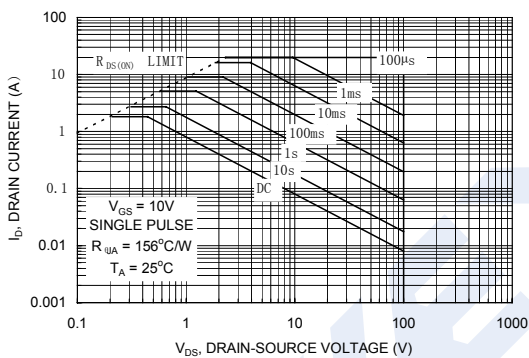


Figure 9. Maximum Safe Operating Area.

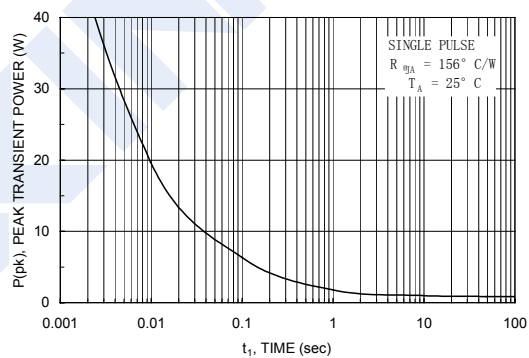


Figure 10. Single Pulse Maximum Power Dissipation.

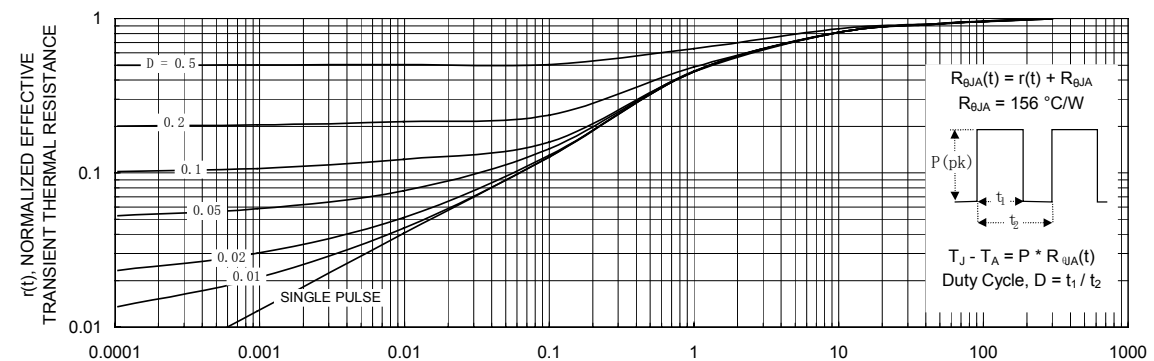


Figure 11. Transient Thermal Response Curve.

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

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