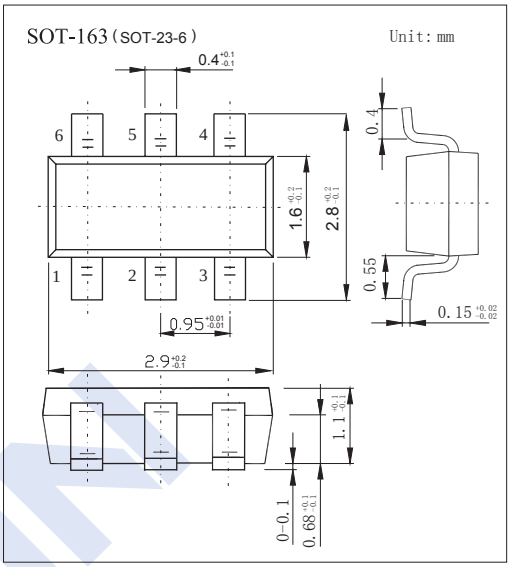
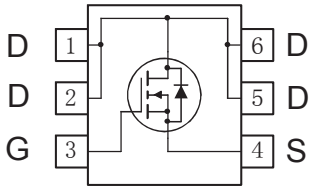
N-Channel Enhancement MOSFET

FDC2512 (KDC2512)



■ Features

- $V_{DS\ (V)}$ = 150V
- I_D = 1.4A (V_{GS} = 10V)
- $R_{DS(ON)}$ < 425mΩ (V_{GS} = 10V)
- $R_{DS(ON)}$ < 475mΩ (V_{GS} = 6V)



■ Absolute Maximum Ratings Ta = 25℃

Parameter		Symbol	Rating	Unit
Drain-Source Voltage		V_{DS}	150	V
Gate-Source Voltage		V_{GS}	±20	
Drain Current - Continuous	*1a	I_D	1.4	A
- Pulsed			8	
Power Dissipation	*1a	P_D	1.6	W
	*1b		0.8	
Thermal Resistance.Junction- to-Ambient	*1a	R_{thJA}	78	℃/W
Thermal Resistance.Junction- to-Case	*1	R_{thJC}	30	
Junction Temperature		T_J	150	℃
Storage Temperature Range		T_{stg}	-55 to 150	

*1. $R_{\theta JA}$ is the sum of the junction-to-case and case-to-ambient thermal resistance where the case thermal reference is defined as the solder mounting surface of the drain pins. $R_{\theta JC}$ is guaranteed by design while $R_{\theta CA}$ is determined by the user's board design.

*1a.78°C/W when mounted on a 1in2 pad of 2 oz copper

*1b.156°C/W when mounted on a minimum pad of 2 oz copper

N-Channel Enhancement MOSFET

FDC2512 (KDC2512)

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=250μA, V_{GS}=0V	150			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=120V, V_{GS}=0V			1	μA
Gate-Body Leakage Current	I_{GSSF}	V_{DS}=0V, V_{GS}=±20V			±100	nA
Gate Threshold Voltage *1	$V_{GS(th)}$	V_{DS}=V_{GS} , I_D=250μA	2	2.6	4	V
Static Drain-Source On-Resistance *1	$R_{DS(ON)}$	V_{GS}=10V, I_D=1.4A		319	425	mΩ
		V_{GS}=10V, I_D=1.4A T_J=125℃		624	875	
		V_{GS}=6.0V, I_D=1.3A		332	475	
On State Drain Current *1	$I_{D(ON)}$	V_{GS}=10V, V_{DS}=5V	4			A
Forward Transconductance *1	g_{FS}	V_{DS}=10V, I_D=1.4A		4		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=75V, f=1MHz		344		pF
Output Capacitance	C_{oss}			22		
Reverse Transfer Capacitance	C_{rss}			9		
Total Gate Charge	Q_g	V_{GS}=10V, V_{DS}=75V, I_D=1.4A *1		8	11	nC
Gate Source Charge	Q_{gs}			1.5		
Gate Drain Charge	Q_{gd}			2.3		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=10V, V_{DS}=75V, I_D=1A,R_{GEN}=6Ω *1		6.5	13	ns
Turn-On Rise Time	t_r			3.5	7	
Turn-Off DelayTime	$t_{d(off)}$			22	33	
Turn-Off Fall Time	t_f			4	8	
Body Diode Reverse Recovery Time	t_{rr}	I_F= 1.4A, dI/dt= 300A/μs *1		45.8		
Body Diode Reverse Recovery Charge	Q_{rr}			119		nC
Maximum Body-Diode Continuous Current	I_S				1.3	A
Diode Forward Voltage *1	V_{SD}	I_S=1.3A,V_{GS}=0V		0.8	1.2	V

*1 Pulse Test: Pulse Width < 300μs, Duty Cycle < 2.0%

■ Marking

Marking	FDC2512

N-Channel Enhancement MOSFET

FDC2512 (KDC2512)

■ Typical Characterisitics

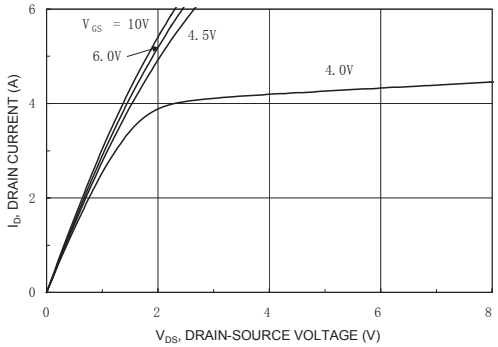


Figure 1. On-Region Characteristics.

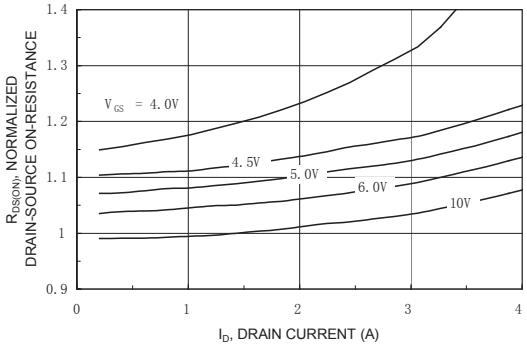


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

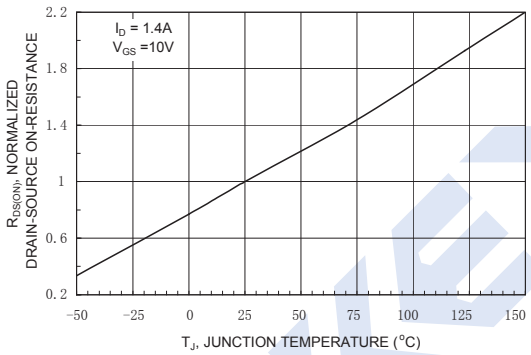


Figure 3. On-Resistance Variation with Temperature.

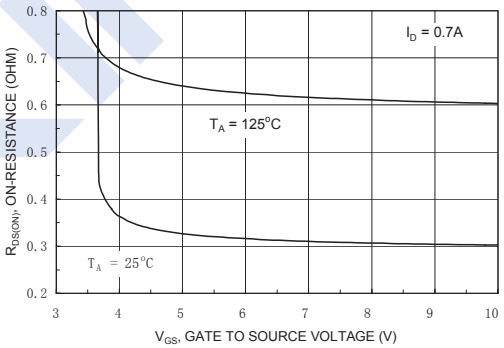


Figure 4. On-Resistance Variation with Gate-to-Source Voltage.

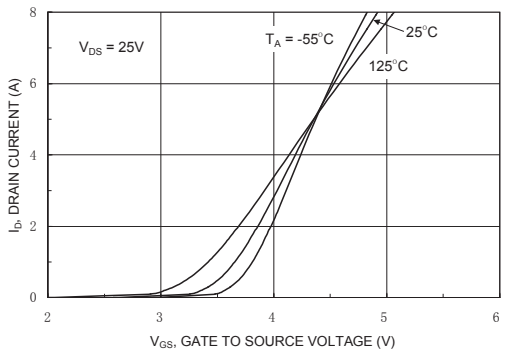


Figure 5. Transfer Characteristics.

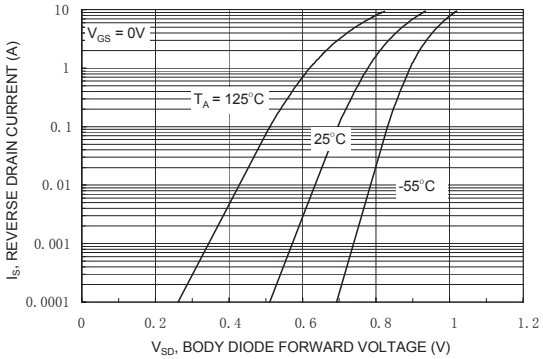


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.

N-Channel Enhancement MOSFET

FDC2512 (KDC2512)

■ Typical Characterisitics

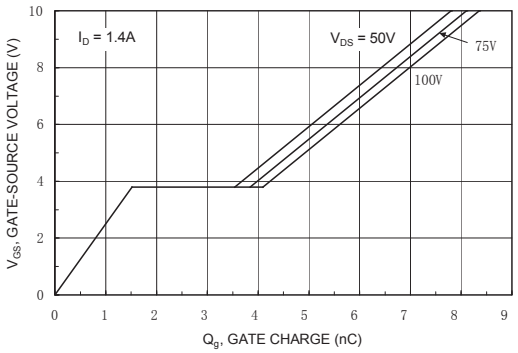


Figure 7. Gate Charge Characteristics.

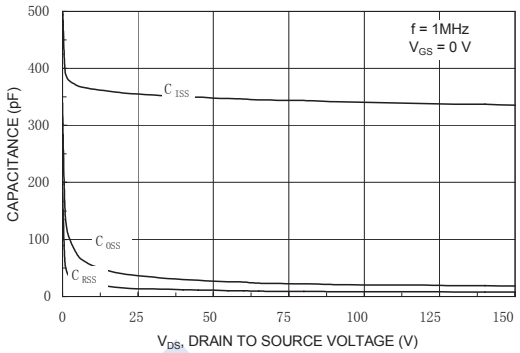


Figure 8. Capacitance Characteristics.

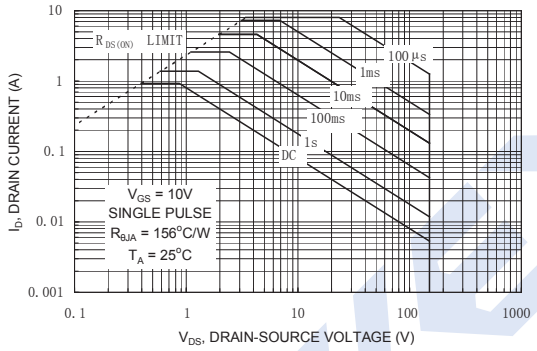


Figure 9. Maximum Safe Operating Area.

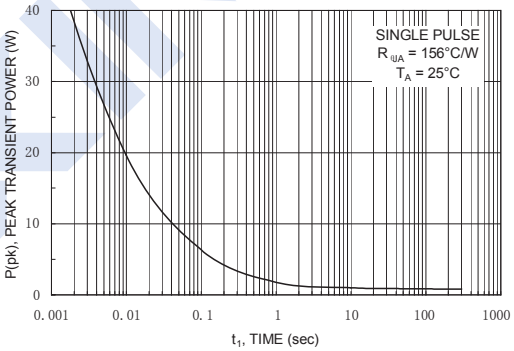


Figure 10. Single Pulse Maximum Power Dissipation.

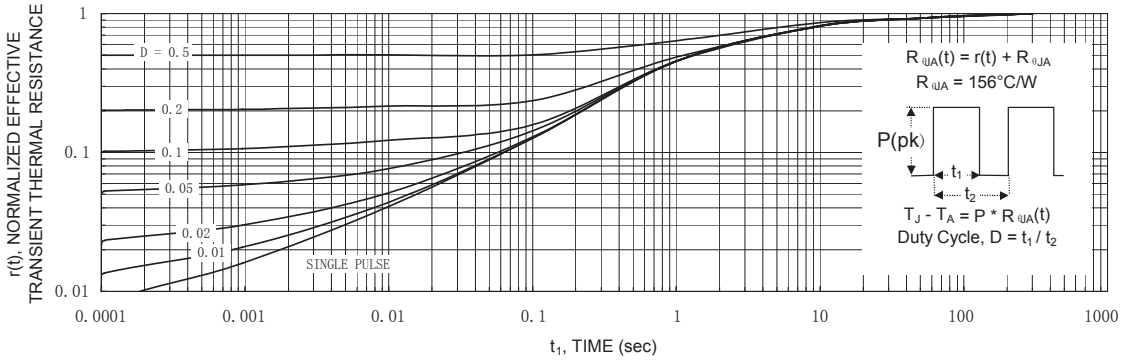


Figure 11. Transient Thermal Response Curve.

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