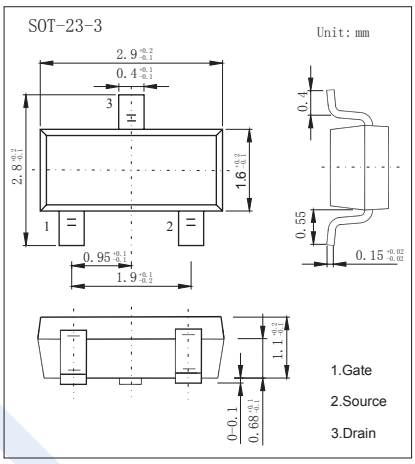
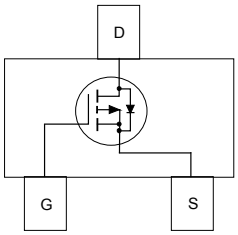
P-Channel MOSFET

FDN304P (KDN304P)



■ Features

- $V_{DS\ (V)}$ =-20V
- I_D =-2.4A (V_{GS} =-4.5V)
- $R_{DS(ON)}$ < 52mΩ (V_{GS} =-4.5V)
- $R_{DS(ON)}$ < 70mΩ (V_{GS} =-2.5V)
- $R_{DS(ON)}$ < 100mΩ (V_{GS} =-1.8V)



■ Absolute Maximum Ratings Ta = 25℃

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	-20	V
Gate-Source Voltage	V_{GS}	±8	
Continuous Drain Current (Note.1)	I_D	-2.4	A
Pulsed Drain Current	I_{DM}	-10	
Power Dissipation (Note.1)	P_D	0.5	W
(Note.2)		0.46	
Thermal Resistance.Junction- to-Ambient (Note.1)	R_{thJA}	250	℃/W
Thermal Resistance.Junction- to-Case	R_{thJC}	75	
Junction Temperature	T_J	150	℃
Junction Storage Temperature Range	T_{stg}	-55 to 150	

Note.1: 250°C/W when mounted on a 0.02 in^2 pad of 2 oz. copper.

Note.2: 270°C/W when mounted on a minimum pad.

P-Channel MOSFET

FDN304P (KDN304P)

■ Electrical Characteristics Ta = 25℃

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Drain-Source Breakdown Voltage	V_{DSS}	I_D=-250μA, V_{GS}=0V	-20			V
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS}=-16V, V_{GS}=0V			-1	μA
Gate-Body leakage current	I_{GSS}	V_{DS}=0V, V_{GS}=±8V			±100	nA
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS}=V_{GS} I_D=-250μA (Note.1)	-0.4		-1.5	V
Static Drain-Source On-Resistance	$R_{DS(ON)}$	V_{GS}=-4.5V, I_D=-2.4A (Note.1)			52	mΩ
		V_{GS}=-2.5V, I_D=-2A (Note.1)			70	
		V_{GS}=-1.8V, I_D=-1.8A (Note.1)			100	
On state drain current	$I_{D(ON)}$	V_{GS}=-4.5V, V_{DS}=-5V	-10			A
Forward Transconductance	g_{FS}	V_{DS}=-5V, I_D=-1.25A		12		S
Input Capacitance	C_{iss}	V_{GS}=0V, V_{DS}=-10V, f=1MHz		1312		pF
Output Capacitance	C_{oss}			240		
Reverse Transfer Capacitance	C_{rss}			106		
Total Gate Charge	Q_g	V_{GS}=-4.5V, V_{DS}=-10V, I_D=-2.4A		12	20	nC
Gate Source Charge	Q_{gs}			2		
Gate Drain Charge	Q_{gd}			2		
Turn-On DelayTime	$t_{d(on)}$	V_{GS}=-4.5V, V_{DS}=-10V, I_D=-1A,R_G=6Ω		15	27	ns
Turn-On Rise Time	t_r			15	27	
Turn-Off DelayTime	$t_{d(off)}$			40	64	
Turn-Off Fall Time	t_f			25	40	
Maximum Body-Diode Continuous Current	I_S				-0.42	A
Diode Forward Voltage	V_{SD}	I_S=-0.42A,V_{GS}=0V			-1.2	V

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

■ Marking

Marking	304

P-Channel MOSFET

FDN304P (KDN304P)

■ Typical Characterisitics

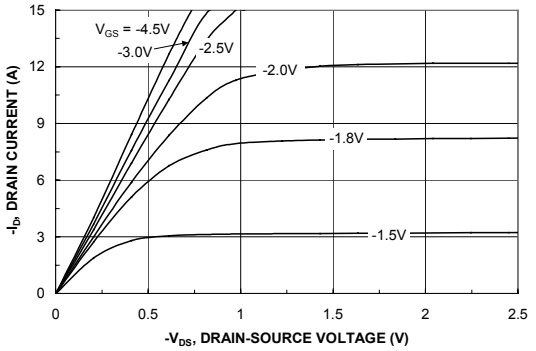


Figure 1. On-Region Characteristics.

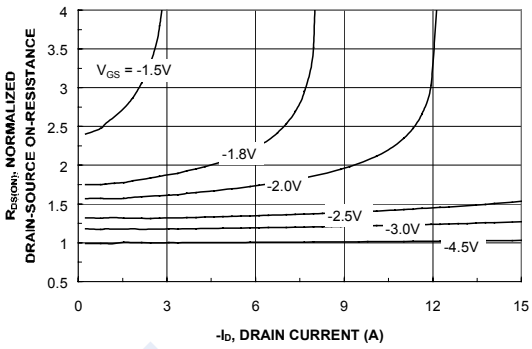


Figure 2. On-Resistance Variation with Drain Current and Gate Voltage.

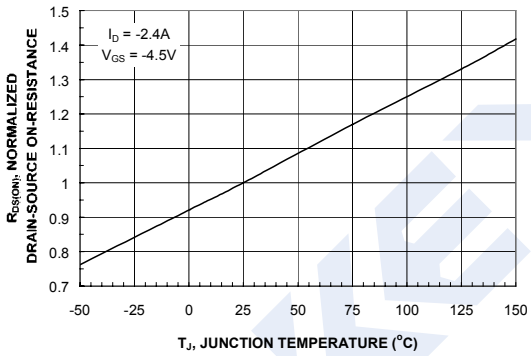


Figure 3. On-Resistance Variation with Temperature.

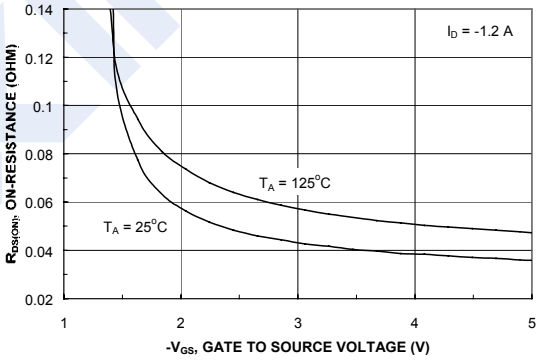


Figure 4. On-Resistance Variation with Gate-to-Source Voltage.

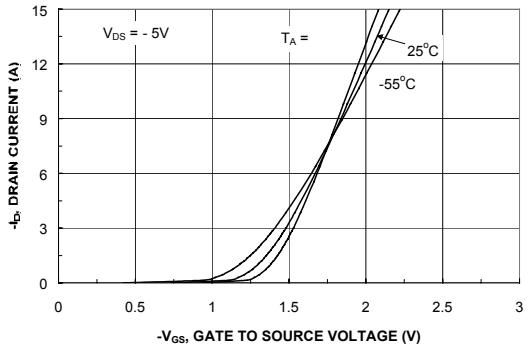


Figure 5. Transfer Characteristics.

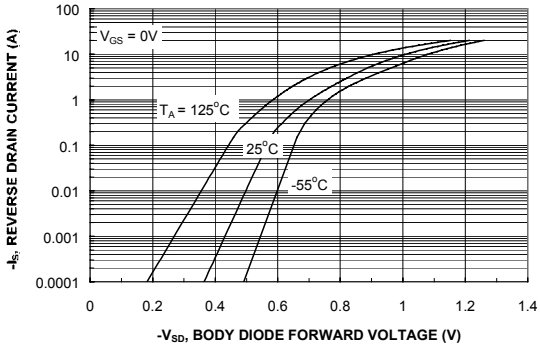


Figure 6. Body Diode Forward Voltage Variation with Source Current and Temperature.

P-Channel MOSFET

FDN304P (KDN304P)

■ Typical Characterisitics

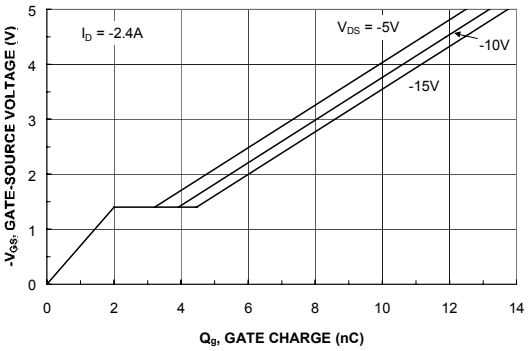


Figure 7. Gate Charge Characteristics.

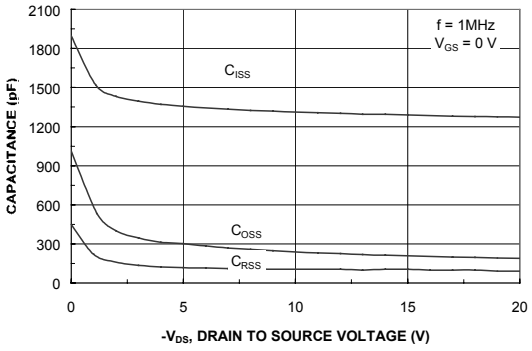


Figure 8. Capacitance Characteristics.

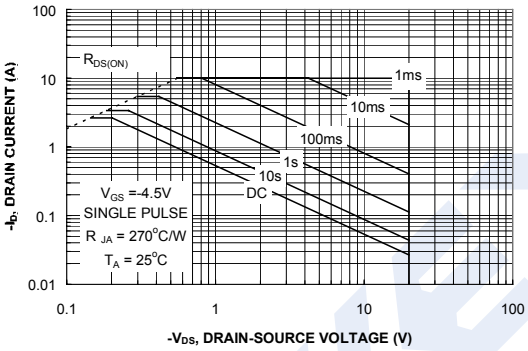


Figure 9. Maximum Safe Operating Area.

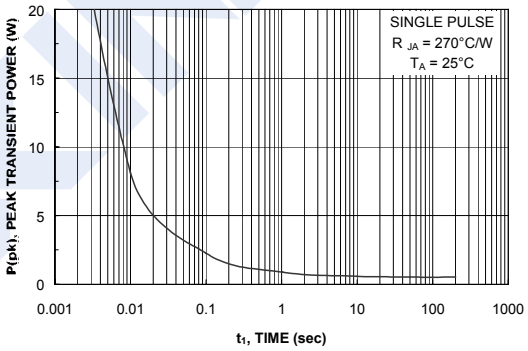


Figure 10. Single Pulse Maximum Power Dissipation.

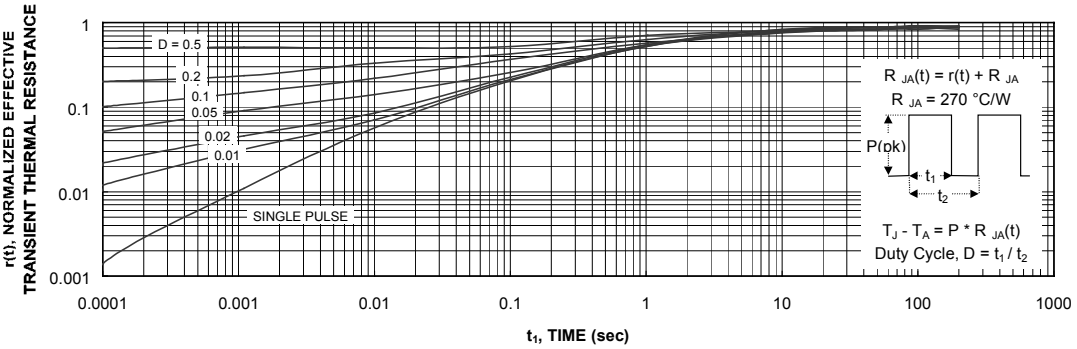


Figure 11. Transient Thermal Response Curve.

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