UNIKC Semiconductor

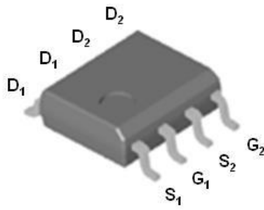
RoHS Compliant

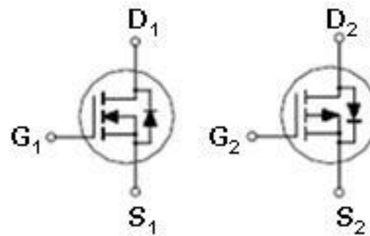
P5806NVG

N&P-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D	Channel
60V	65mΩ @V_{GS} = 10V	4.5A	N
-60V	120mΩ @V_{GS} = -10V	-3.5A	P





SOP- 08

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	CH.	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	N	60	V
			P	-60	
Gate-Source Voltage		V_{GS}	N	±20	
			P	±20	
Continuous Drain Current	T_A = 25 °C	I_D	N	4.5	A
			P	-3.5	
	T_A = 70 °C		N	3.5	
			P	-2.7	
Pulsed Drain Current[1]		I_{DM}	N	20	
			P	-20	
Avalanche Current		I_{AS}	N	18.3	
			P	-18.3	
Avalanche Energy	L=0.1mH	E_{AS}	N	16.9	mJ
			P	16.9	
Power Dissipation	T_A = 25 °C	P_D	N	2	W
			P	2	
	T_A = 70 °C		N	1.3	
			P	1.3	
Junction & Storage Temperature Range		T_J, T_{STG}		-55 to 150	°C

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		60	°C / W

[1]Pulse width limited by maximum junction temperature.

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ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS		LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	N	60			V
		V_{GS} = 0V, I_D = -250μA	P	-60			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	N		1.5		
		V_{DS} = V_{GS}, I_D = -250μA	P		1.9		
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	N			±100	nA
		V_{DS} = 0V, V_{GS} = ±20V	P			±100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 48V, V_{GS} = 0V	N			1	μA
		V_{DS} = -48V, V_{GS} = 0V	P			-1	
		V_{DS} = 40V, V_{GS} = 0V, T_J = 55 °C	N			10	
		V_{DS} = -40V, V_{GS} = 0V, T_J = 55 °C	P			-10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	N	20			A
		V_{DS} = -5V, V_{GS} = -10V	P	-20			
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 4A	N		63	85	mΩ
		V_{GS} = -4.5V, I_D = -3A	P		122	150	
		V_{GS} = 10V, I_D = 4.5A	N		51	65	
		V_{GS} = -10V, I_D = -3.5A	P		95	120	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 4.5A	N		14		S
		V_{DS} = -10V, I_D = -3.5A	P		9		

PARAMETER	SYMBOL	TEST CONDITIONS		MIN	TYP	MAX	UNIT
DYNAMIC							
Input Capacitance	C_{iss}	N-Channel V_{GS} = 0V, V_{DS} = 25V, f = 1MHz P-Channel V_{GS} = 0V, V_{DS} = -25V, f = 1MHz	N		576		pF
			P		705		
Output Capacitance	C_{oss}		N		57		
			P		59		
Reverse Transfer Capacitance	C_{rss}		N		40		
			P		52		
Total Gate Charge[2]	Q_g	N-Channel V_{DS} = 30V, V_{GS} = 10V, I_D = 4.5A P-Channel V_{DS} = 30V, V_{GS} = -10V, I_D = -3.5A	N		14		nC
			P		16		
Gate-Source Charge[2]	Q_{gs}		N		3		
			P		3		
Gate-Drain Charge[2]	Q_{gd}		N		4		
			P		4		

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DYNAMIC							
Reverse Transfer Capacitance	C_{rss}	V_{DS} = 0V, V_{GS} = 0V,f=1MHz	N		1.9		Ω
			P		6.7		
Turn-On Delay Time[2]	$t_{d(on)}$	N-Channel V_{DS}= 30V $I_D \cong$ 1A, V_{GS} = 10V, R_{GEN} = 6Ω P-Channel V_{DS} = -30V $I_D \cong$ -1A, V_{GS} = -10V, R_{GEN} = 6Ω	N		30		nS
			P		21		
Rise Time[2]	t_r		N		27		
			P		30		
Turn-Off Delay Time[2]	$t_{d(off)}$		N		53		
			P		51		
Fall Time[2]	t_f		N		23		
			P		33		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current	I_S		N			2	A
			P			-2	
Forward Voltage[1]	V_{SD}	I_F = 4.5A, V_{GS} = 0V	N			1	V
		I_F = -3.5A, V_{GS} = 0V	P			-1	
Reverse Recovery Time	t_{rr}	I_F = 4.5A, dI_F/dt = 100A/µS	N		20		nS
		I_F = -3.5A, dI_F/dt = 100A/µS	P		22		
Reverse Recovery Charge	Q_{rr}		N		13		nC
			P		19		

[1]Pulse test : Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.

[2]Independent of operating temperature.

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Package Dimension

SOP-8 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.8	4.9	5.0	H	0.4	0.6	0.93
B	3.8	3.9	4.0	I	0.19	0.21	0.25
C	5.79	6.0	6.2	J	0.25	0.375	0.5
D	0.33	0.4	0.51	K	0°	3°	18°
E	1.25	1.27	1.29				
F	1.1	1.3	1.65				
G	0.05	0.15	0.25