NIKO-SEM

Dual N-Channel Enhancement Mode Field Effect Transistor

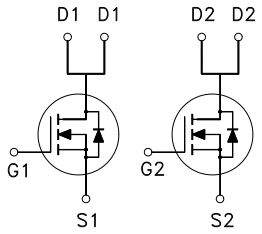
P6006HV

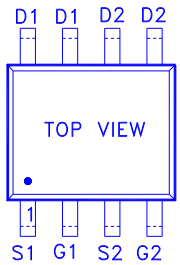
SOP-8

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
60	60mΩ	4.5A





G : GATE
D : DRAIN
S : SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	60	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_C = 25 °C	I_D	4.5	A
	T_C = 70 °C		4	
Pulsed Drain Current[1]		I_{DM}	20	
Avalanche Current		I_{AR}	4.5	
Avalanche Energy	L = 0.1mH	E_{AS}	1	mJ
Repetitive Avalanche Energy[2]	L = 0.1mH	E_{AR}	1	
Power Dissipation	T_C = 25 °C	P_D	2	W
	T_C = 70 °C		1.3	
Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Lead(steady-state)	$R_{\theta JL}$		60	°C / W
Junction-to-Ambient(steady-state)	$R_{\theta JA}$		110	°C / W
Junction-to-Ambient(t≦10s)	$R_{\theta JA}$		62.5	°C / W

[1]Pulse width limited by maximum junction temperature.
[2]Duty cycle ≤ 1%

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 250μA	60			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	1.0	1.5	3.0	

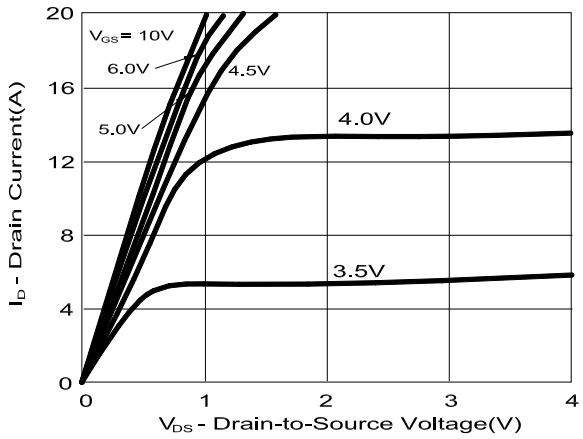
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 48V, V_{GS} = 0V			1	μA
		V_{DS} = 40V, V_{GS} = 0V, T_J = 55 °C			10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	20			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 4A		60	80	mΩ
		V_{GS} = 10V, I_D = 4.5A		48	60	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 4.5A		13		S

DYNAMIC							
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz			595		pF
Output Capacitance	C_{oss}				73		
Reverse Transfer Capacitance	C_{rss}				32		
Total Gate Charge[2]	Q_g	V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 10V, I_D = 4.5A			11.5	16	nC
Gate-Source Charge[2]	Q_{gs}				2.2		
Gate-Drain Charge[2]	Q_{gd}				2.4		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 30V, $I_D \cong$ 1A, V_{GS} = 10V, R_{GEN} = 6Ω			10	18	nS
Rise Time[2]	t_r				7.3	15	
Turn-Off Delay Time[2]	$t_{d(off)}$				17.5	32	
Fall Time[2]	t_f				5.5	12	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_C = 25 °C)							
Continuous Current	I_S				1.3		A
Pulsed Current[3]	I_{SM}				4.5		
Forward Voltage[1]	V_{SD}	I_F = I_S A, V_{GS} = 0V			1		V

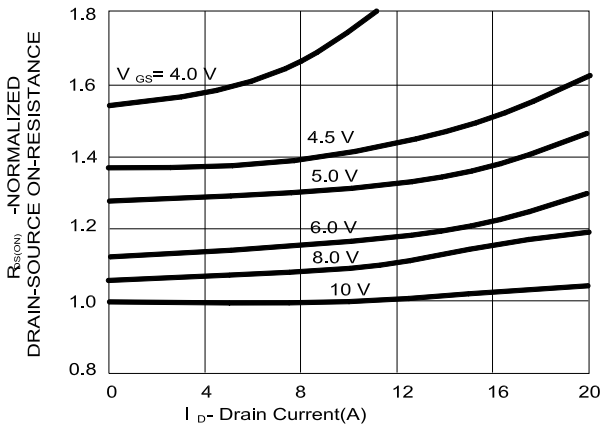
[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Pulse width limited by maximum junction temperature.

REMARK: THE PRODUCT MARKED WITH "P6006HV", DATE CODE or LOT #

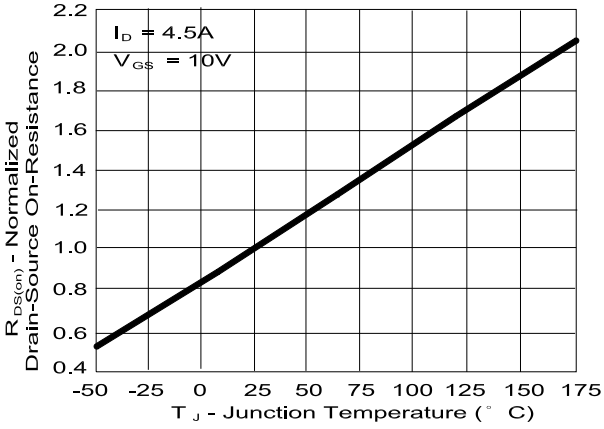
On-Region Characteristics



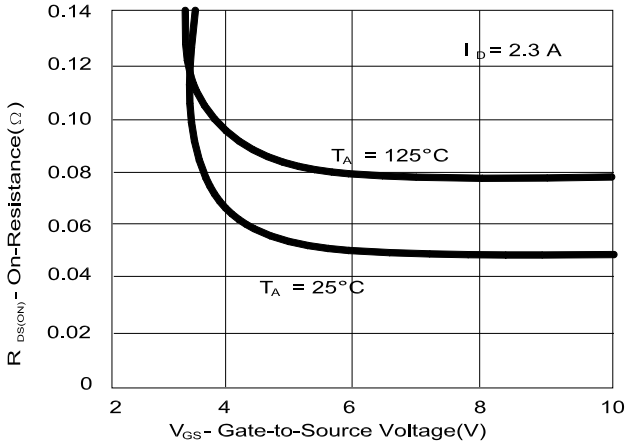
On-Resistance Variation with Drain Current and Gate Voltage



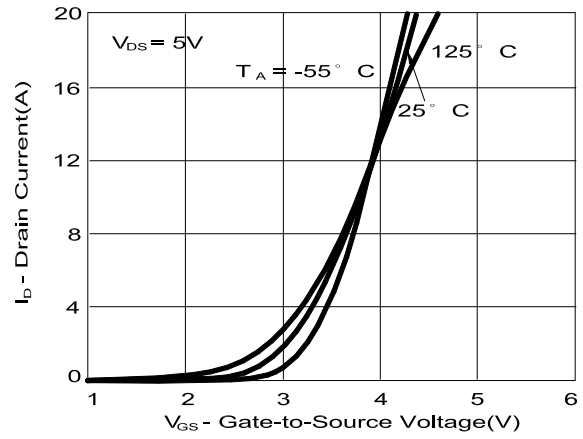
On-Resistance Variation with Temperature



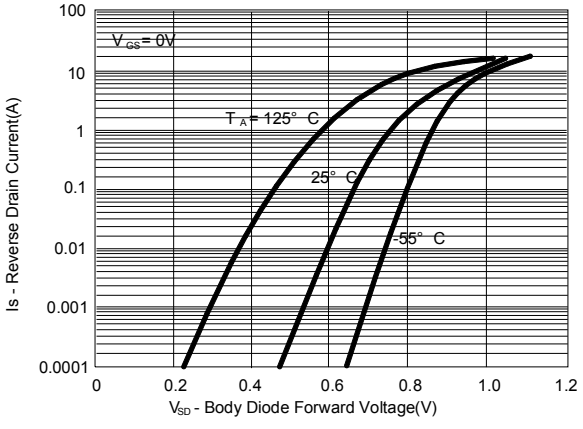
On-Resistance Variation with Gate-to-Source Voltage



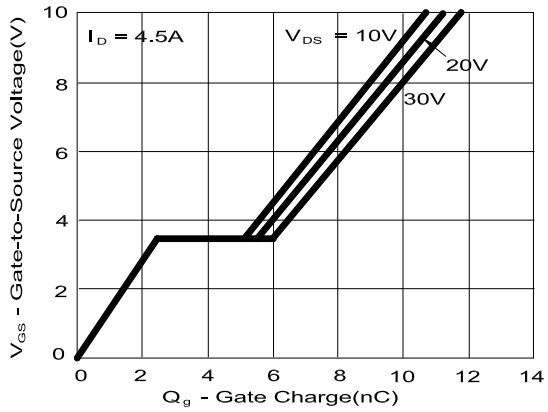
Transfer Characteristics



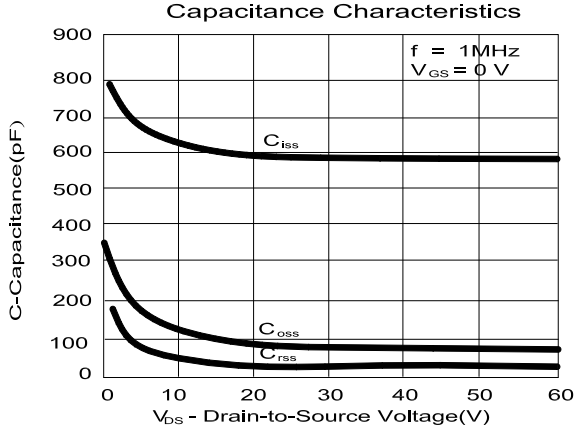
Body Diode Forward Voltage Variation with Source Current and Temperature



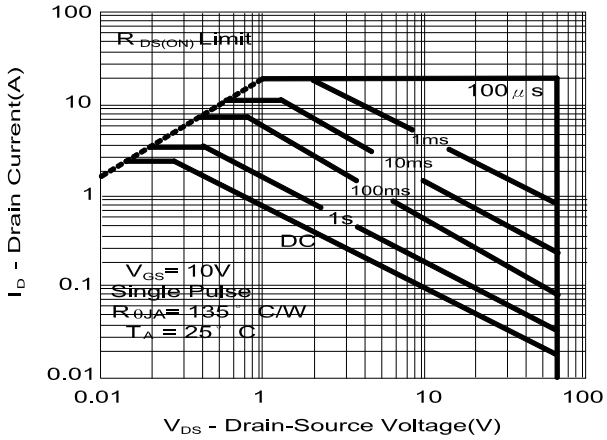
Gate Charge Characteristics



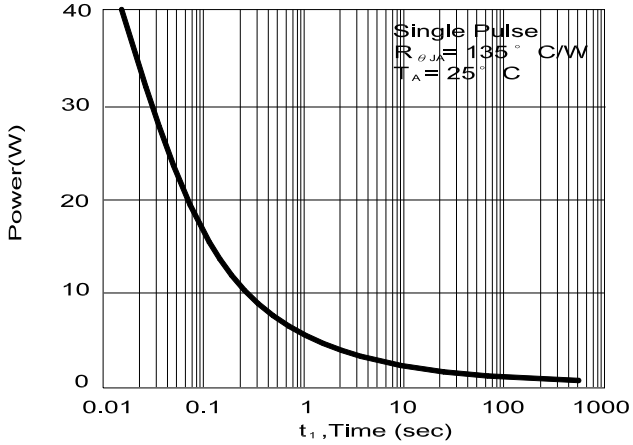
Capacitance Characteristics



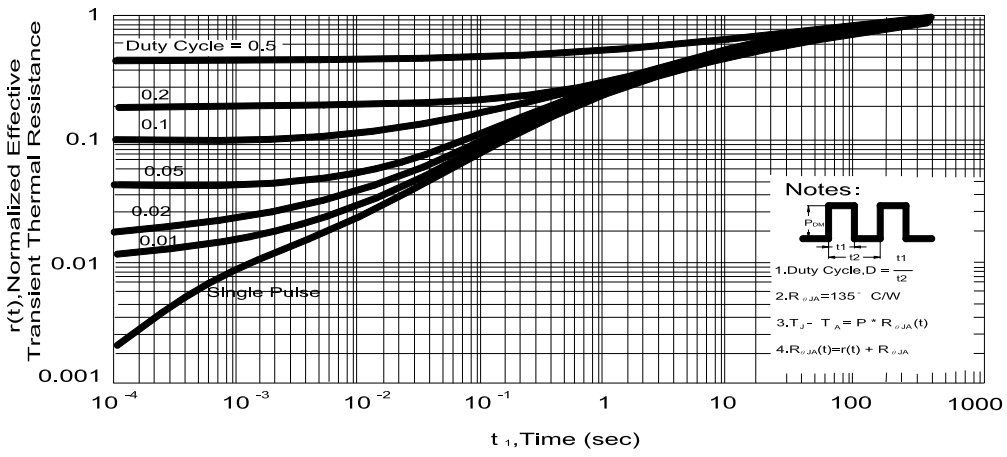
Maximum Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



SOP-8 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.70	4.90	5.10	H	0.40	0.715	0.83
B	3.70	3.90	4.10	I	0.19	0.22	0.26
C	5.80	6.00	6.20	J	0.25	0.375	0.5
D	0.33	0.445	0.51	K	0°	4°	8°
E		1.27		L			
F	1.20	1.375	1.62	M			
G	0.08	0.175	0.28	N