NIKO-SEM

Dual N-Channel Enhancement Mode Field Effect Transistor

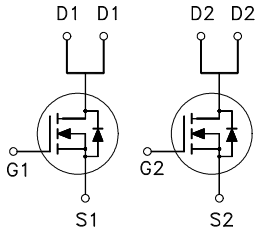
P5506HVG

SOP-8

Halogen-free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
60	55mΩ	4.5A



RoHS Compliant

G : GATE
D : DRAIN
S : SOURCE

ABSOLUTE MAXIMUM RATINGS (T_A = 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_A = 25 °C	I_D	4.5	A
	T_A = 70 °C		4	
Pulsed Drain Current[1]		I_{DM}	25	
Avalanche Current		I_{AS}	17	
Avalanche Energy	L = 0.1mH	E_{AS}	14	mJ
Power Dissipation	T_A = 25 °C	P_D	2	W
	T_A = 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_J = 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	2.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA

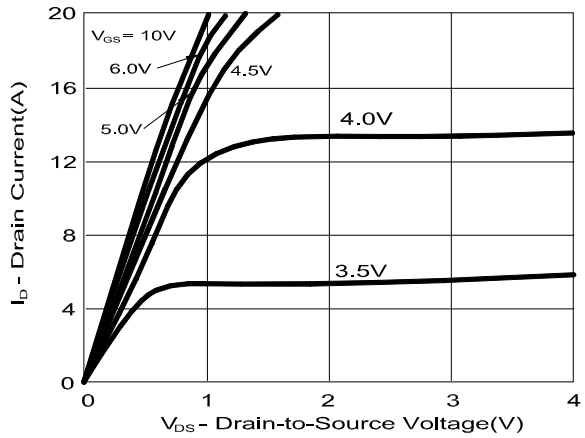
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 48V, V_{GS} = 0V			1	μA
		V_{DS} = 40V, V_{GS} = 0V, T_J = 55 °C			10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	25			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 4A		55	75	mΩ
		V_{GS} = 10V, I_D = 4.5A		42	55	
Forward Transconductance[1]	g_{fs}	V_{DS} = 10V, I_D = 4.5A		14		S

DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 25V, f = 1MHz		650		pF
Output Capacitance	C_{oss}			80		
Reverse Transfer Capacitance	C_{rss}			35		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz		1.6		Ω
Total Gate Charge[2]	Q_g	V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 10V, I_D = 4.5A		12.5	18	nC
Gate-Source Charge[2]	Q_{gs}			2.4		
Gate-Drain Charge[2]	Q_{gd}			2.6		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DD} = 30V, I_D ≅ 1A, V_{GS} = 10V, R_{GEN} = 6Ω		11	20	nS
Rise Time[2]	t_r			8	18	
Turn-Off Delay Time[2]	$t_{d(off)}$			19	35	
Fall Time[2]	t_f			6	15	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				2	A
Forward Voltage[1]	V_{SD}	I_F = 4.5 A, V_{GS} = 0V			1	V

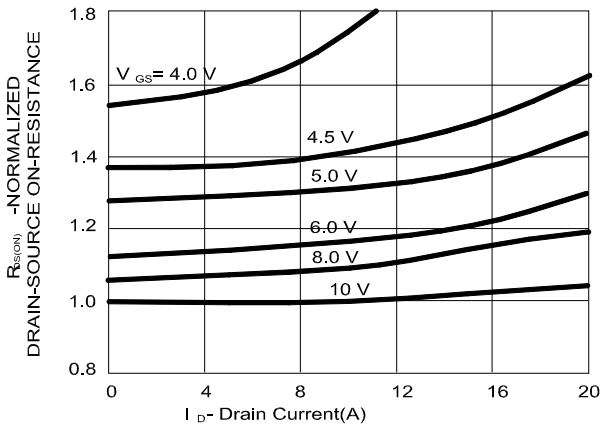
[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.

REMARK: THE PRODUCT MARKED WITH "P5506HVG", DATE CODE or LOT #

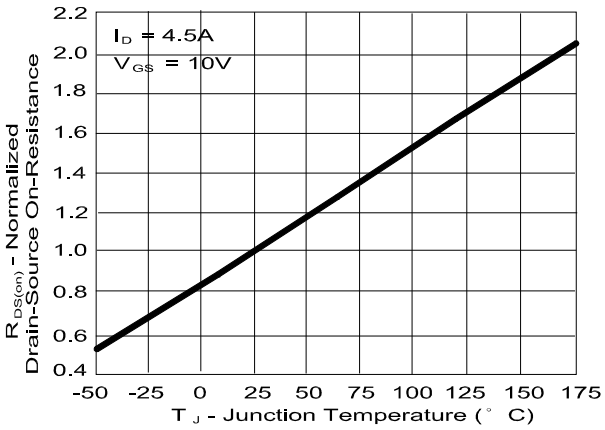
On-Region Characteristics



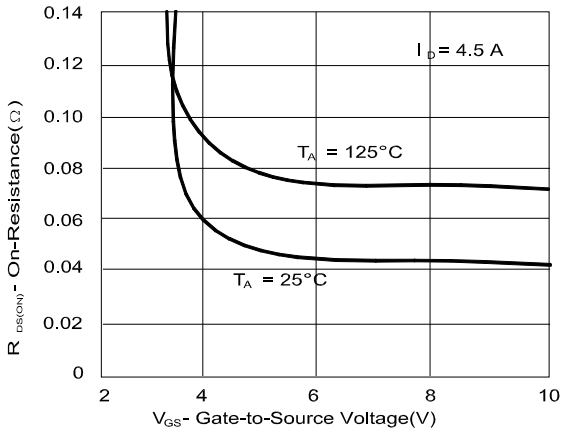
On-Resistance Variation with Drain Current and Gate Voltage



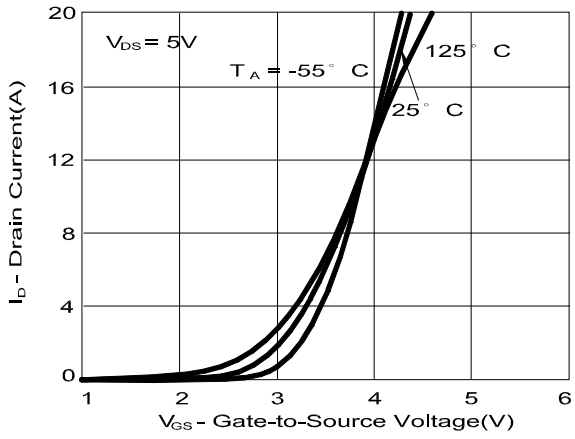
On-Resistance Variation with Temperature



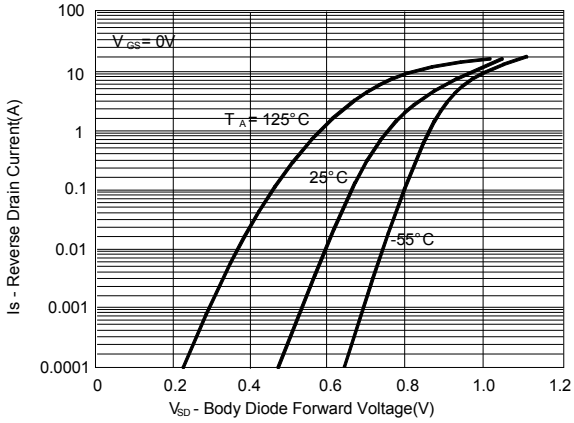
On-Resistance Variation with Gate-to-Source Voltage



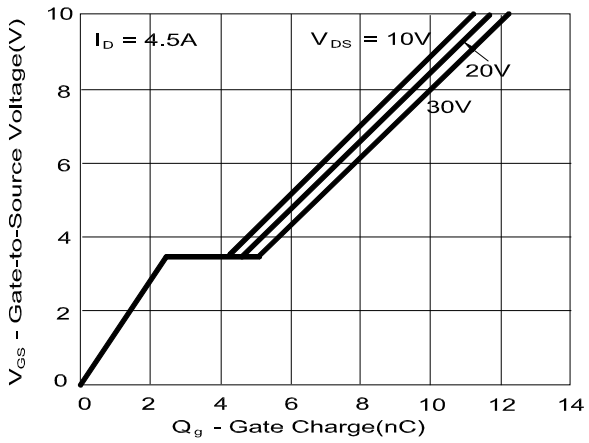
Transfer Characteristics



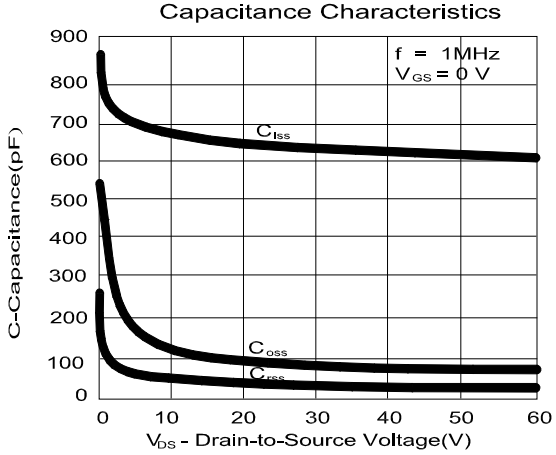
Body Diode Forward Voltage Variation with Source Current and Temperature



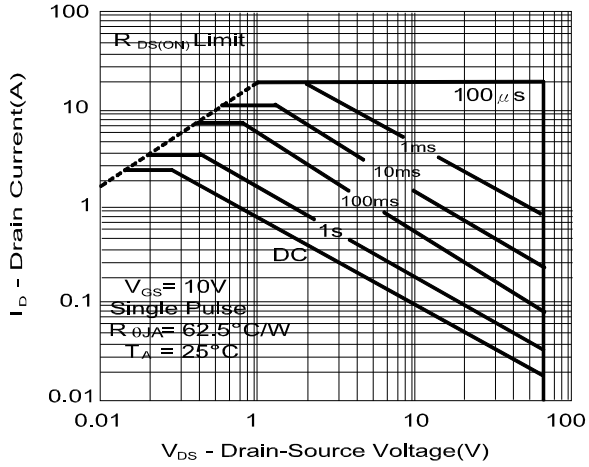
Gate Charge Characteristics



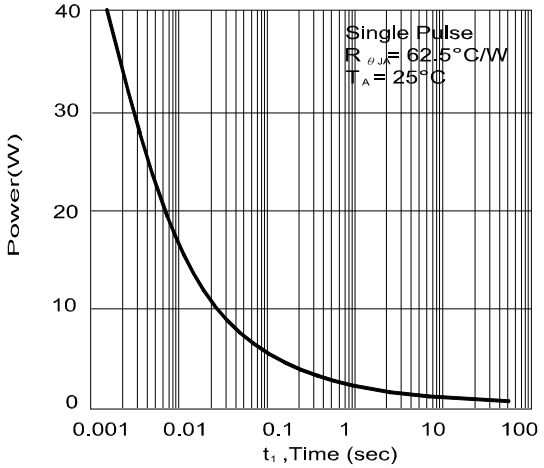
Capacitance Characteristics



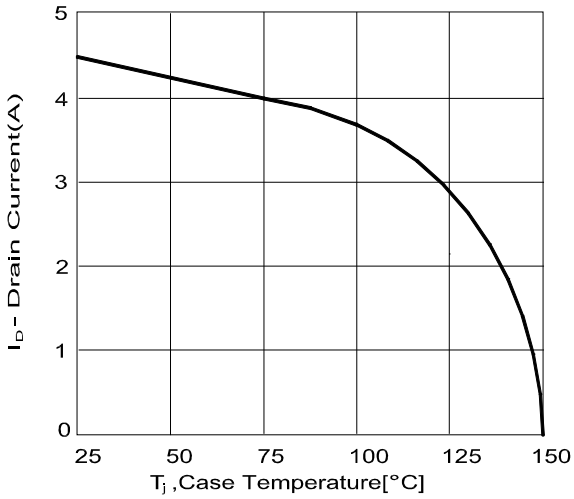
Maximum Safe Operating Area

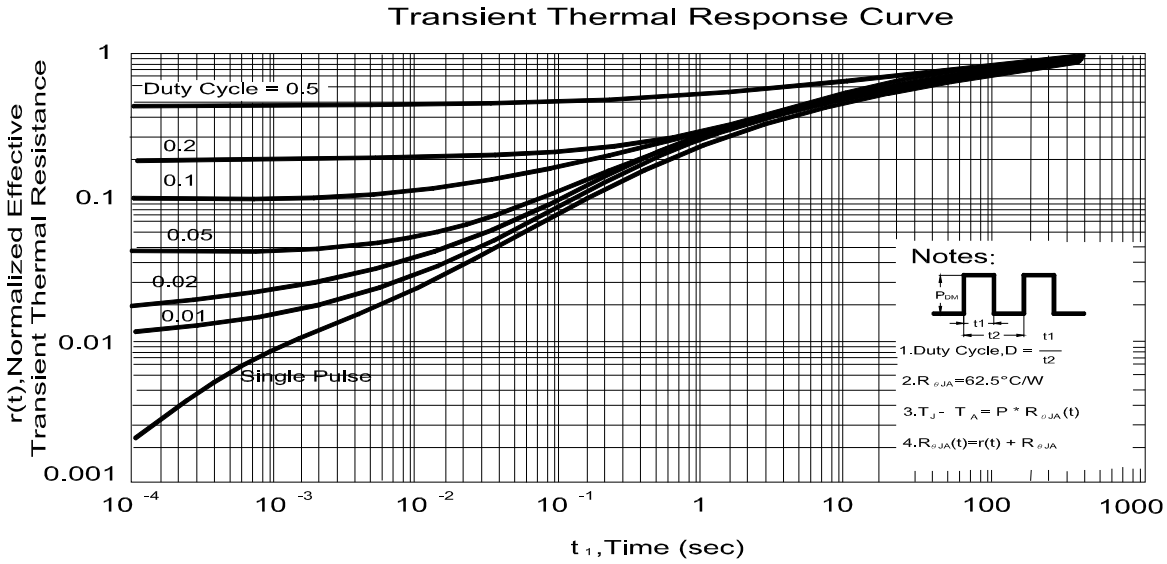


Single Pulse Maximum Power Dissipation



Transfer Characteristics




Transient Thermal Response Curve
r(t),Normalized Effective Transient Thermal Resistance
1
0.1
0.01
0.001
Duty Cycle = 0.5
0.2
0.1
0.05
0.02
0.01
Single Pulse
Notes:
1.Duty Cycle,D = t1/t2
2.RθJA=62.5°C/W
3.TJ - TA = P * RθJA(t)
4.RθJA(t)=r(t) + RθJA
10 -4
10 -3
10 -2
10 -1
1
10
100
1000
t1,Time (sec)