NIKO-SEM

P-Channel Logic Level Enhancement Mode Field Effect Transistor (Preliminary)

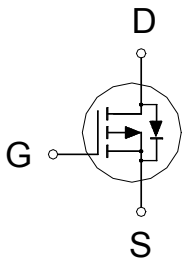
P0703EK

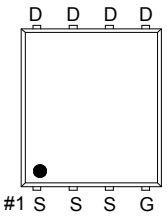
NPAK SOP-8

Halogen-Free & Lead-Free

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-30V	7.5mΩ	- 30A





RoHS Compliant

1. GATE
2. DRAIN
3. SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±25	V
Continuous Drain Current	T_C = 25 °C (Package Limited)	I_D	-30	A
	T_C = 25 °C (Silicon Limited)		-72	
	T_C = 100 °C		-45	
Pulsed Drain Current[1]		I_{DM}	-120	
Continuous Drain Current	T_A = 25 °C	I_D	-14	
	T_A = 70 °C		-11	
Avalanche Current		I_{AS}	-70	
Avalanche Energy	L = 0.1mH	E_{AS}	249	mJ
Power Dissipation	T_C = 25 °C	P_D	62.5	W
	T_C = 100 °C		25	
Power Dissipation	T_A = 25 °C	P_D	2.5	W
	T_A = 70 °C		1.6	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		50	°C / W
Junction-to-Case	$R_{\theta JC}$		2	

[1]Pulse width limited by maximum junction temperature.

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

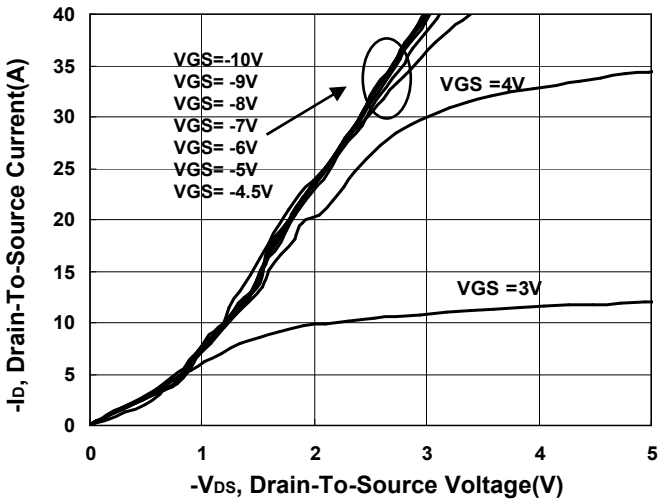
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = -250μA	-1	-1.7	-3	

Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±25V			±250	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = -24V, V_{GS} = 0V			1	μA
		V_{DS} = -20V, V_{GS} = 0V, T_J = 125 °C			10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = -5V, V_{GS} = -10V	-120			A
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} = -4.5V, I_D = -20A		8	12	mΩ
		V_{GS} = -10V, I_D = -25A		5.3	7.5	
Forward Transconductance[1]	g_{fs}	V_{DS} = -5V, I_D = -25A		25		S
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz		5730		pF
Output Capacitance	C_{oss}			911		
Reverse Transfer Capacitance	C_{rss}			679		
Total Gate Charge[2]	Q_g V_{GS}=10V	V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = -10V, I_D = -25A		120		nC
	Q_g V_{GS}=4.5V			60		
Gate-Source Charge[2]	Q_{gs}			16		
Gate-Drain Charge[2]	Q_{gd}			30		
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} = -20V, I_D ≅ -25A, V_{GS} = -10V, R_{GS} = 6Ω		20		nS
Rise Time[2]	t_r			36		
Turn-Off Delay Time[2]	$t_{d(off)}$			140		
Fall Time[2]	t_f			102		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				-30	A
Forward Voltage[1]	V_{SD}	I_F = -25A, V_{GS} = 0V			-1.3	V
Reverse Recovery Time	t_{rr}	I_F = -25A, dI_F/dt = 100A / μS		42		nS
Reverse Recovery Charge	Q_{rr}			30		nC

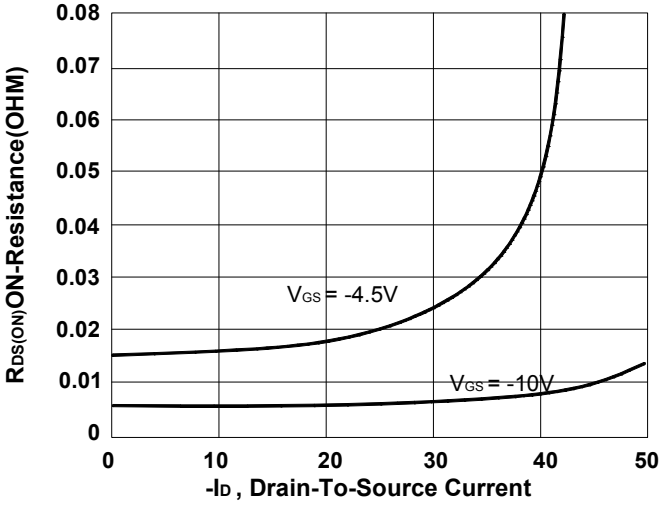
[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.

REMARK: THE PRODUCT MARKED WITH "P0703EK", DATE CODE or LOT #

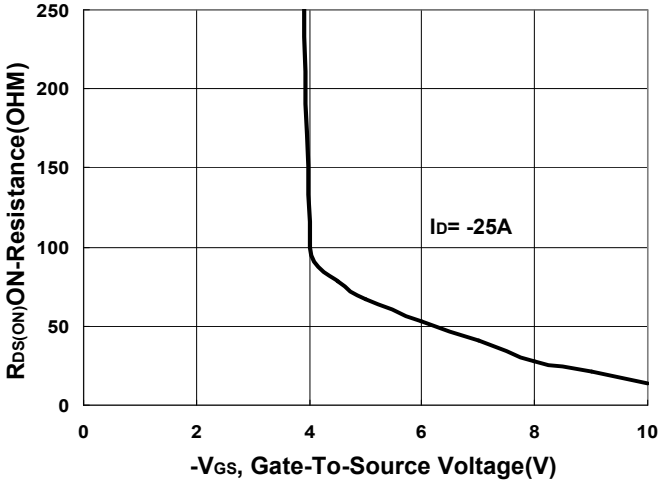
Output Characteristics



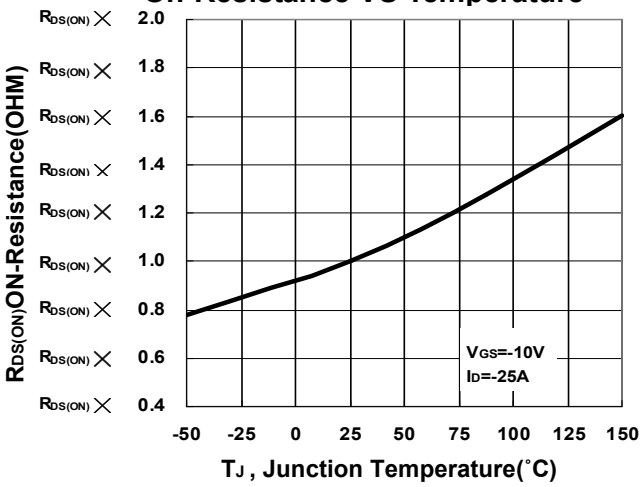
On-Resistance VS Drain Current



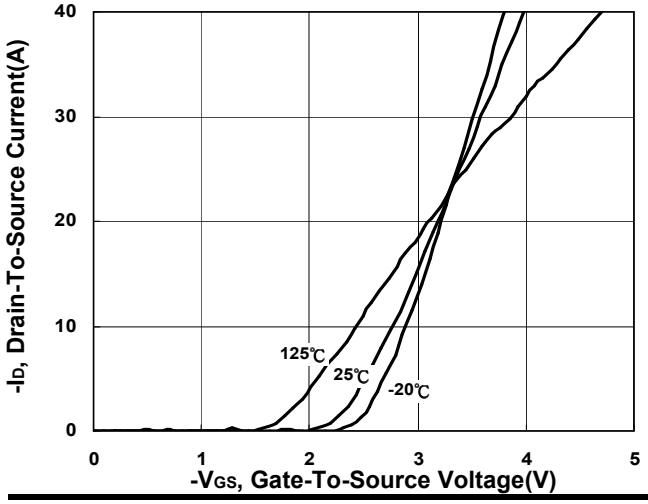
On-Resistance VS Gate-To-Source



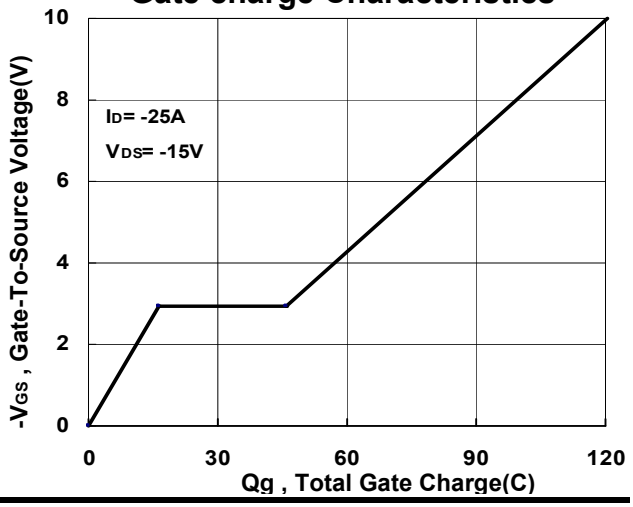
On-Resistance VS Temperature



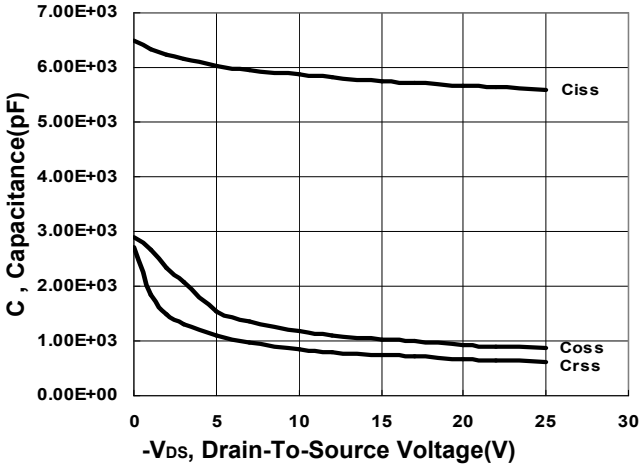
Transfer Characteristics



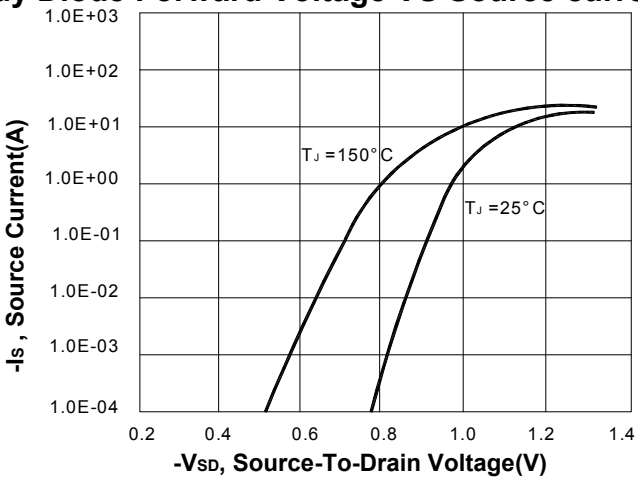
Gate charge Characteristics



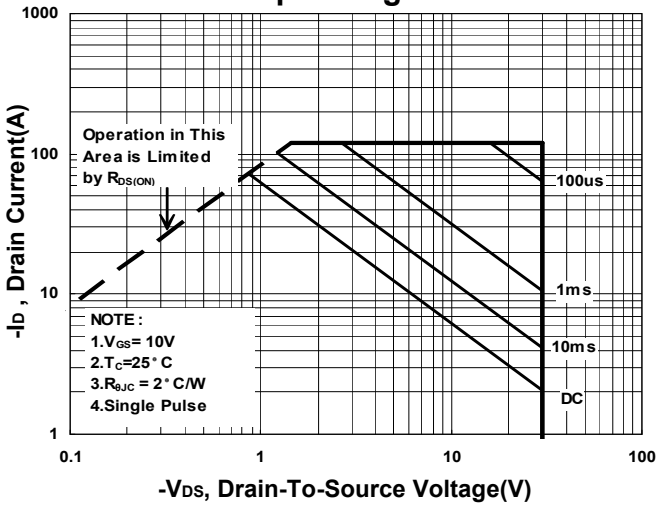
Capacitance Characteristic



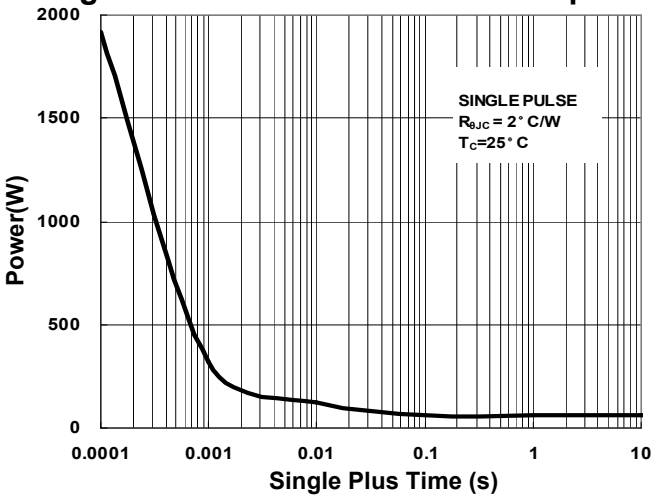
Body Diode Forward Voltage VS Source current



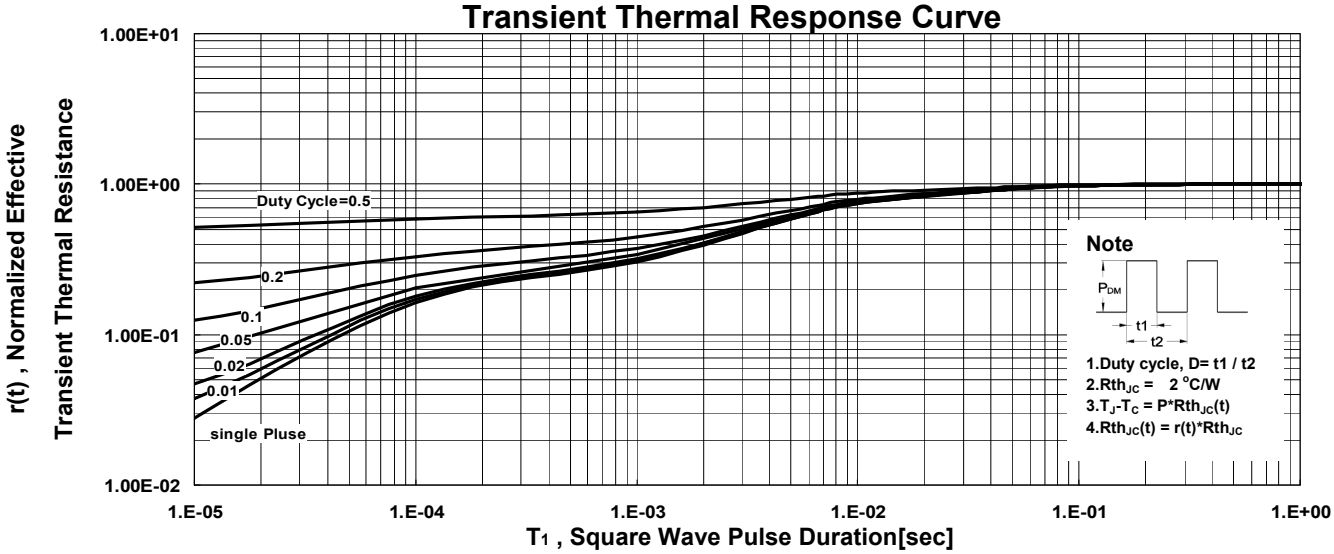
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



Package Dimension

NPAK 5x6 MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.8	4.9	5.0	I	0.5	0.6	0.7
B	5.7	5.75	5.8	J	3.40	3.60	3.80
C	5.9	6.0	6.1	K	1.1		
D	0.35	0.40	0.45	L	0.50	0.60	0.70
E		1.27		M	8°	10°	12°
F	0.9	1.0	1.1	N			5.1
G	0.2	0.25	0.3	O	0.06	0.13	0.20
H	3.8	3.9	4.0	P			0.1