**NIKO-SEM**

# P-Channel Logic Level Enhancement Mode Field Effect Transistor

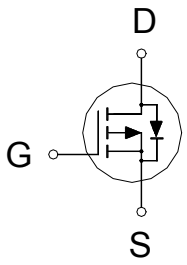
# PE521BA

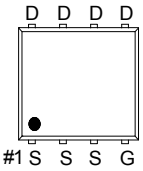
**PDFN 3x3P**

**Halogen-Free & Lead-Free**

## PRODUCT SUMMARY

| $V_{(BR)DSS}$ | $R_{DS(ON)}$ | $I_D$ |
|---|---|---|
| -20V | 20mΩ | -23A |




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 | | $V_{DS}$ | -20 | V |
| Gate-Source Voltage | | $V_{GS}$ | ±8 | V |
| Continuous Drain Current[3] | $T_C$ = 25 °C | $I_D$ | -23 | A |
| | $T_C$ = 100 °C | | -18 | |
| | $T_A$ = 25 °C | | -7 | |
| | $T_A$ = 70 °C | | -6 | |
| Pulsed Drain Current[1] | | $I_{DM}$ | -60 | |
| Avalanche Current | | $I_{AS}$ | -20 | |
| Avalanche Energy | L = 0.1mH | $E_{AS}$ | 20 | mJ |
| Power Dissipation | $T_C$ = 25 °C | $P_D$ | 17.8 | W |
| | $T_C$ = 100 °C | | 11.4 | |
| | $T_A$ = 25 °C | | 1.8 | |
| | $T_A$ = 70 °C | | 1.2 | |
| 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[2] | $R_{\theta JA}$ | | 68 | °C / W |
| Junction-to-Case | $R_{\theta JC}$ | | 7 | |

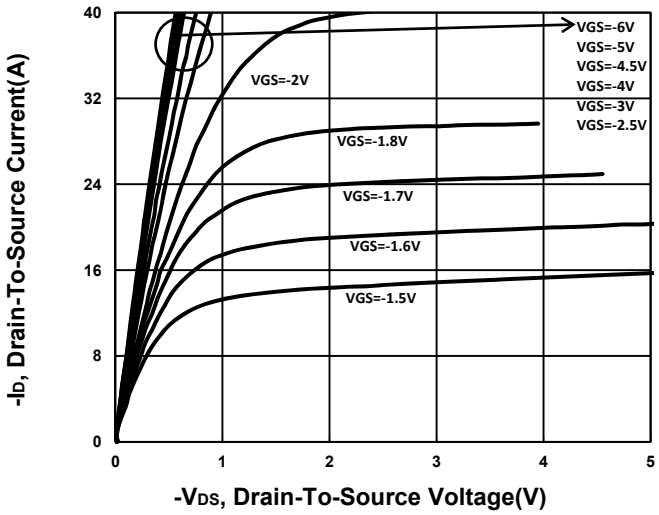
[1]Pulse width limited by maximum junction temperature.
[2]The value of $R_{\theta JA}$ is measured with the device mounted on 1in$^2$ FR-4 board with 2oz. Copper, in a still air environment with $T_A$ =25° C. The value in any given application depends on the user's specific board design.
[3]Package limitation current is -11A.

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

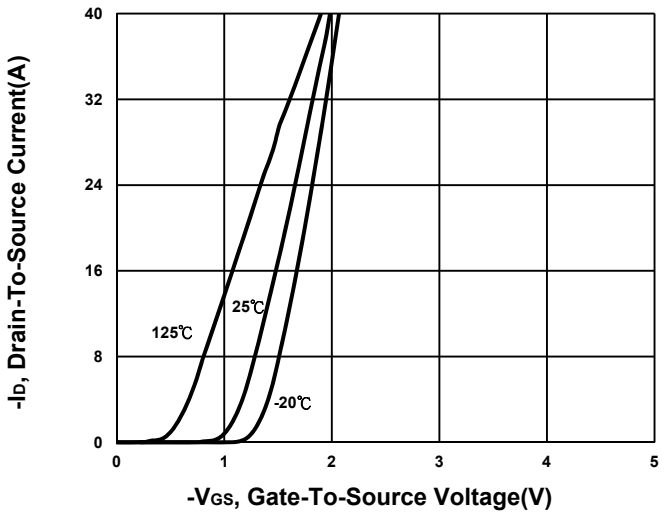
| PARAMETER | SYMBOL | TEST CONDITIONS | LIMITS MIN | LIMITS TYP | LIMITS MAX | UNIT |
|---|---|---|---|---|---|---|
| **STATIC** | | | | | | |
| Drain-Source Breakdown Voltage | $V_{(BR)DSS}$ | $V_{GS}$ = 0V, $I_D$ = -250μA | -20 | | | V |
| Gate Threshold Voltage | $V_{GS(th)}$ | $V_{DS}$ = $V_{GS}$, $I_D$ = -250μA | -0.3 | -0.6 | -1 | V |
| Gate-Body Leakage | $I_{GSS}$ | $V_{DS}$ = 0V, $V_{GS}$ = ±8V | | | ±100 | nA |
| Zero Gate Voltage Drain Current | $I_{DSS}$ | $V_{DS}$ = -16V, $V_{GS}$ = 0V | | | -1 | uA |
| | | $V_{DS}$ = -10V, $V_{GS}$ = 0V, $T_J$ = 125 °C | | | -10 | uA |
| Drain-Source On-State Resistance[1] | $R_{DS(ON)}$ | $V_{GS}$ = -4.5V, $I_D$ = -2.5A | | 14 | 20 | mΩ |
| | | $V_{GS}$ = -2.5V, $I_D$ = -2A | | 17 | 25 | mΩ |
| | | $V_{GS}$ = -1.8V, $I_D$ = -1A | | 22 | 35 | mΩ |
| Forward Transconductance[1] | $g_{fs}$ | $V_{DS}$ = -5V, $I_D$ = -2.5A | | 21 | | S |
| **DYNAMIC** | | | | | | |
| Input Capacitance | $C_{iss}$ | $V_{GS}$ = 0V, $V_{DS}$ = -10V, f = 1MHz | | 1801 | | pF |
| Output Capacitance | $C_{oss}$ | | | 179 | | pF |
| Reverse Transfer Capacitance | $C_{rss}$ | | | 160 | | pF |
| Gate Resistance | Rg | $V_{GS}$ = 0V, $V_{DS}$ = 0V, f = 1MHz | | 10 | | Ω |
| Total Gate Charge[2] | $Q_{g(VGS=-4.5V)}$ | $V_{DS}$ =-10V, $I_D$ = -2.5A | | 22.7 | | nC |
| | $Q_{g(VGS=-2.5V)}$ | | | 13.3 | | nC |
| Gate-Source Charge[2] | $Q_{gs}$ | | | 1.9 | | nC |
| Gate-Drain Charge[2] | $Q_{gd}$ | | | 5.4 | | nC |
| Turn-On Delay Time[2] | $t_{d(on)}$ | $V_{DS}$ = -10V, $I_D$ ≅ -2.5A, $V_{GS}$ = -4.5V, $R_{GS}$ = 6Ω | | 19 | | nS |
| Rise Time[2] | $t_r$ | | | 34 | | nS |
| Turn-Off Delay Time[2] | $t_{d(off)}$ | | | 216 | | nS |
| Fall Time[2] | $t_f$ | | | 165 | | nS |
| **SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J$ = 25 °C)** | | | | | | |
| Continuous Current[3] | $I_S$ | | | | -16 | A |
| Forward Voltage[1] | $V_{SD}$ | $I_F$ = -2.5A, $V_{GS}$ = 0V | | | -1.2 | V |
| Reverse Recovery Time | $t_{rr}$ | $I_F$ = -2.5A , $dI_F/dt$ = 100 A / μS | | 35 | | nS |
| Reverse Recovery Charge | $Q_{rr}$ | | | 18 | | nC |

[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Package limitation current is -11A.

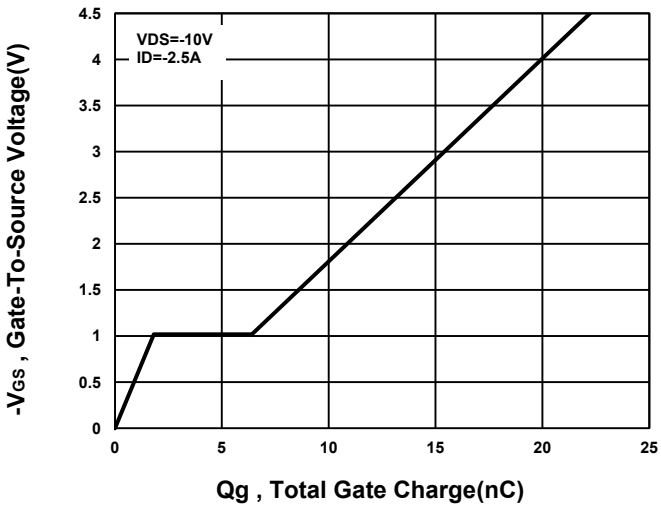
## Output Characteristics



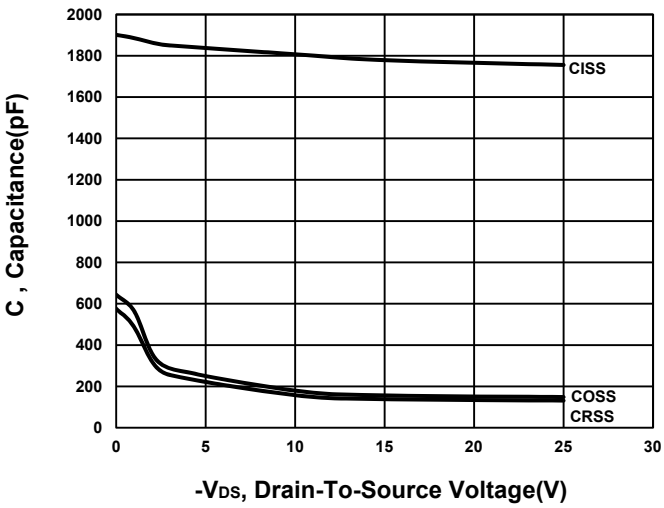

## Transfer Characteristics



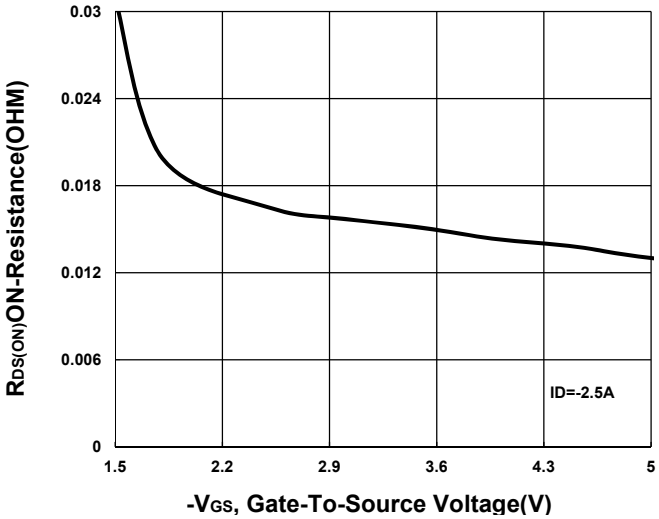

## Gate charge Characteristics



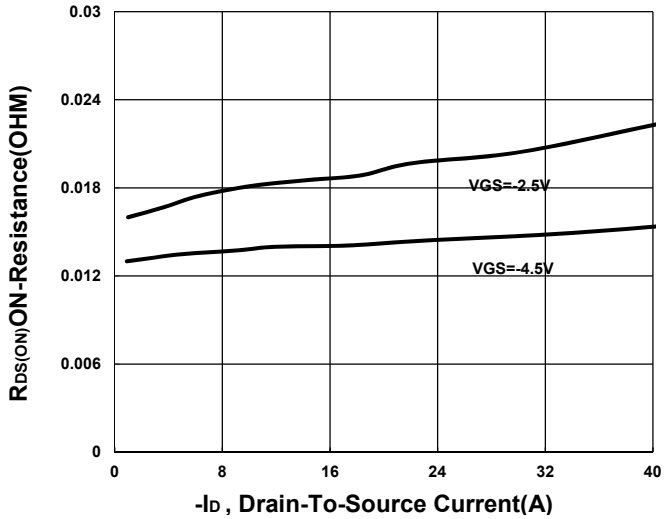

## Capacitance Characteristic



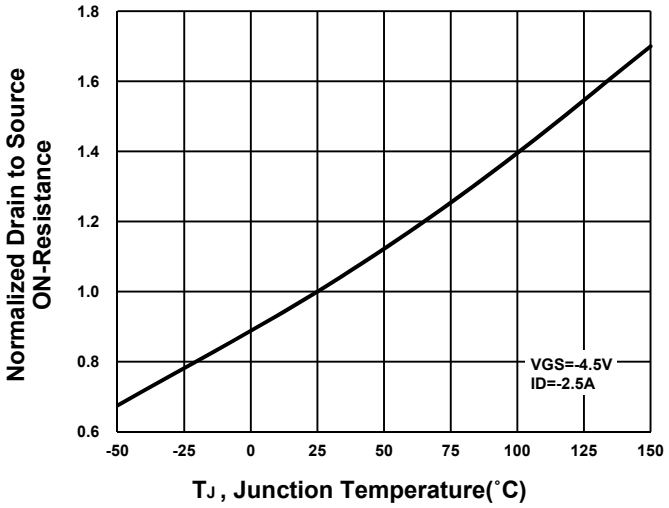

## On-Resistance VS Gate-To-Source



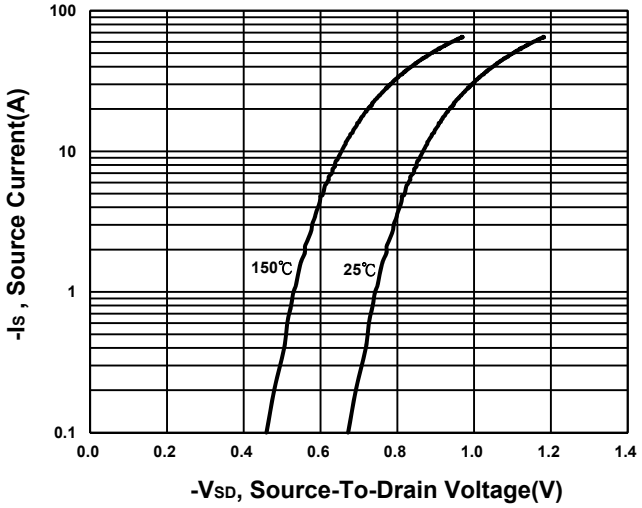

## On-Resistance VS Drain Current



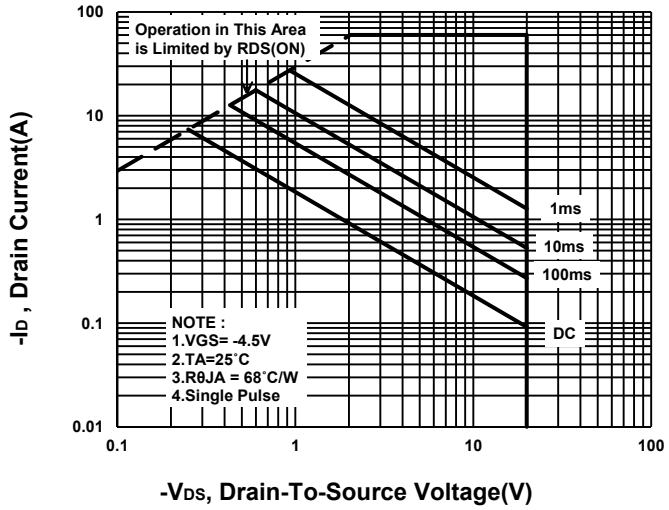
## On-Resistance VS Temperature



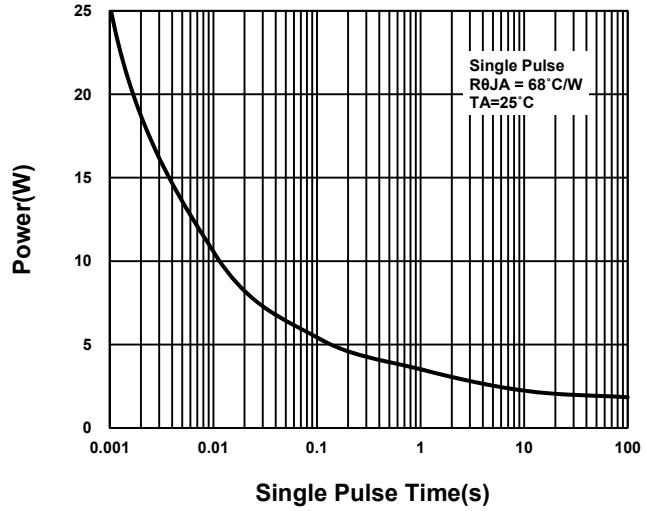

## Source-Drain Diode Forward Voltage



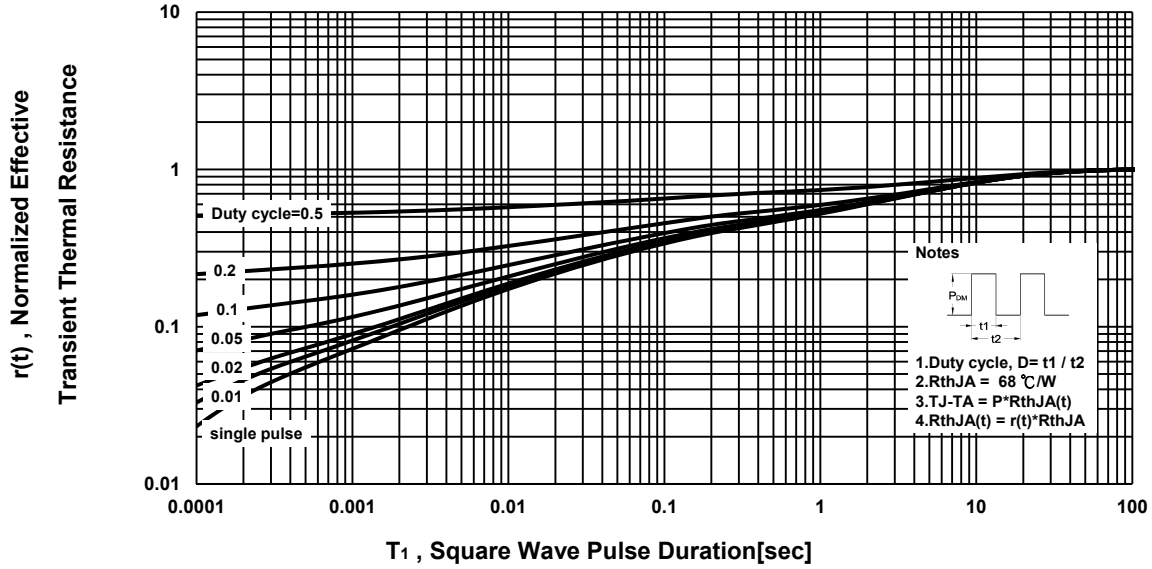

## Safe Operating Area




## Single Pulse Maximum Power Dissipation




## Transient Thermal Response Curve



ENTEGRECİ

Bu belge www.entegreci.com üzerinden sunulmaktadır.

# Elektronik komponent tedarikinde Entegreci

Entegreci, Eskişehir merkezli, Türkiye geneline satış yapan bir elektronik komponent mağazasıdır. Entegreler (IC), mikrodenetleyiciler, transistörler, diyotlar, pasif elemanlar, konnektörler, modüller ve geliştirme kartları tek adetten seri üretim adetlerine kadar satılır. Ürün sayfalarında güncel stok durumunu, fiyatı ve datasheet bağlantısını bulabilirsiniz.

### Parça koduyla arama

Üretici parça numarasını yazın; stok ve fiyatı hemen görün.

**www.entegreci.com**

### Ürün kategorileri

Entegreden kapasitöre tüm elektronik komponent kategorileri.

**Kategorilere göz atın**

### Üreticiler

Aradığınız üreticinin ürünlerini tek sayfada inceleyin.

**Üreticileri görün**

### Toplu alım ve teklif

Listede olmayan ya da yüksek adetli parçalar için teklif isteyin.

**Teklif isteyin**

**www.entegreci.com** | **destek@entegreci.com** | **0850 305 90 34**

Entegreci is an online electronic components store based in Türkiye. Search by manufacturer part number to see stock, prices and datasheets for integrated circuits, microcontrollers, transistors, passive components and connectors, or request a quote for parts that are not listed.

Bu sayfa Entegreci tarafından eklenmiştir. Belgenin önceki sayfaları asıl yayıncısına aittir ve içeriği değiştirilmemiştir; en güncel sürüm için belgenin yayıncısına başvurun.