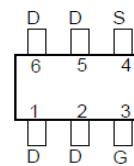
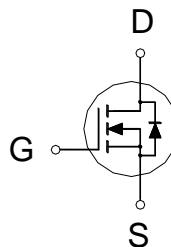


**NIKO-SEM****N-Channel Enhancement Mode  
Field Effect Transistor****PA520BA**  
SOT-23-6  
Halogen-Free & Lead-Free**PRODUCT SUMMARY**

$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
30V	20mΩ	6.3A



G: GATE  
D: DRAIN  
S: SOURCE

**ABSOLUTE MAXIMUM RATINGS ( $T_A = 25^\circ C$  Unless Otherwise Noted)**

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		$V_{GS}$	$\pm 20$	V
Continuous Drain Current	$T_A = 25^\circ C$	$I_D$	6.3	A
	$T_A = 70^\circ C$		4.7	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	30	A
Avalanche Current		$I_{AS}$	17	
Avalanche Energy	$L = 0.1\text{mH}$	$E_{AS}$	15	mJ
Power Dissipation	$T_A = 25^\circ C$	$P_D$	1.2	W
	$T_A = 70^\circ C$		0.8	
Operating Junction & Storage Temperature Range		$T_j, T_{stg}$	-55 to 150	° C

**THERMAL RESISTANCE RATING**

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		40	° C / W
Junction-to-Ambient <sup>2</sup>	$R_{\theta JA}$		98	

<sup>1</sup>Pulse width limited by maximum junction temperature.

<sup>2</sup>The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Copper, in a still air environment with  $T_A = 25^\circ C$ .

**ELECTRICAL CHARACTERISTICS ( $T_J = 25^\circ C$ , Unless Otherwise Noted)**

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
<b>STATIC</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1	1.4	2.5	
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$			$\pm 100$	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = 24V, V_{GS} = 0V$			1	$\mu A$
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 125^\circ C$			10	
Drain-Source On-State Resistance <sup>1</sup>	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 6.3A$		15.3	20	$m\Omega$
		$V_{GS} = 4.5V, I_D = 6.3A$		18.2	25	
Forward Transconductance <sup>1</sup>	$g_{fs}$	$V_{DS} = 5V, I_D = 6.3A$		41		S

**NIKO-SEM****N-Channel Enhancement Mode  
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DYNAMIC						
Input Capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$		496		pF
Output Capacitance	$C_{oss}$			81		
Reverse Transfer Capacitance	$C_{rss}$			73		
Total Gate Charge <sup>2</sup>	$Q_{g(V_{GS}=10V)}$	$V_{DS} = 15V, I_D = 6.3A$		14.4		nC
	$Q_{g(V_{GS}=4.5V)}$			8		
Gate-Source Charge <sup>2</sup>	$Q_{gs}$			1.6		
Gate-Drain Charge <sup>2</sup>	$Q_{gd}$			3.9		
Turn-On Delay Time <sup>2</sup>	$t_{d(on)}$	$V_{DD} = 15V,$ $I_D \approx 6.3A, V_{GS} = 10V, R_{GEN} = 6\Omega$		12		nS
Rise Time <sup>2</sup>	$t_r$			10		
Turn-Off Delay Time <sup>2</sup>	$t_{d(off)}$			27		
Fall Time <sup>2</sup>	$t_f$			10		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ( $T_J = 25^\circ C$ )						
Continuous Current <sup>2</sup>	$I_S$				6.3	A
Forward Voltage <sup>1</sup>	$V_{SD}$	$I_F = 6.3A, V_{GS} = 0V$			1	V
Reverse Recovery Time	$t_{rr}$	$I_F = 6.3A, dI_F/dt = 100A / \mu S$ $V_{GS} = 0V$		10.7		nS
Reverse Recovery Charge	$Q_{rr}$			2.6		nC

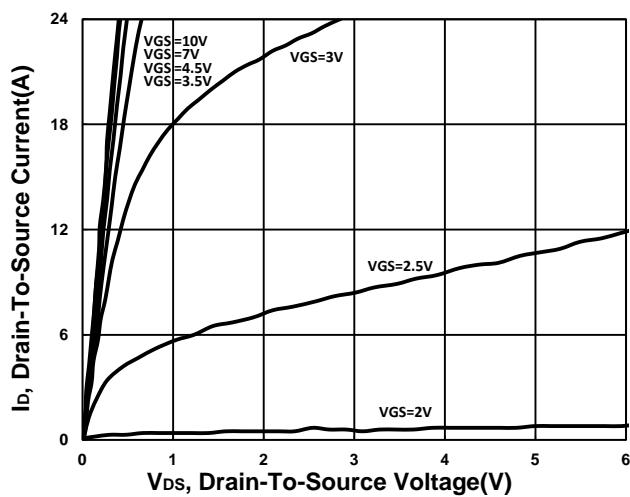
<sup>1</sup>Pulse test : Pulse Width  $\leq 300 \mu sec$ , Duty Cycle  $\leq 2\%$ .<sup>2</sup>Independent of operating temperature.

**NIKO-SEM**

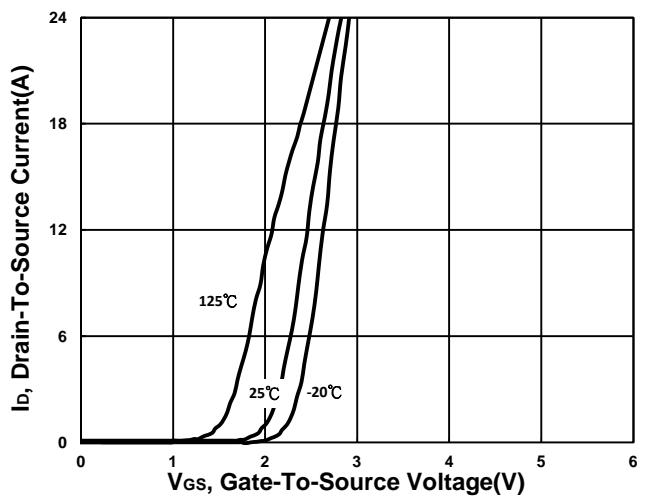
**N-Channel Enhancement Mode  
Field Effect Transistor**

**PA520BA**  
**SOT-23-6**  
**Halogen-Free & Lead-Free**

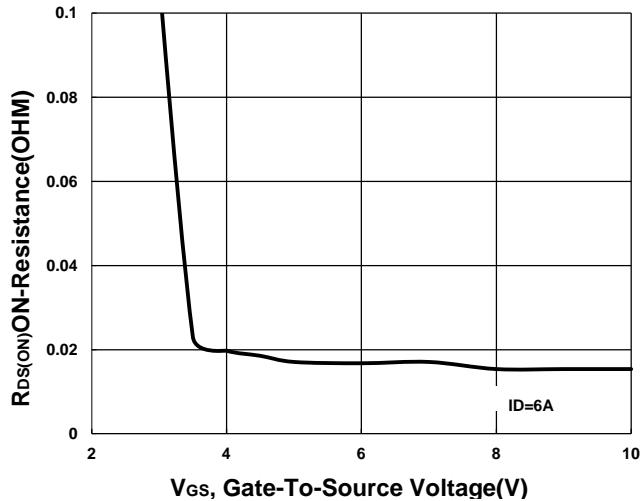
**Output Characteristics**



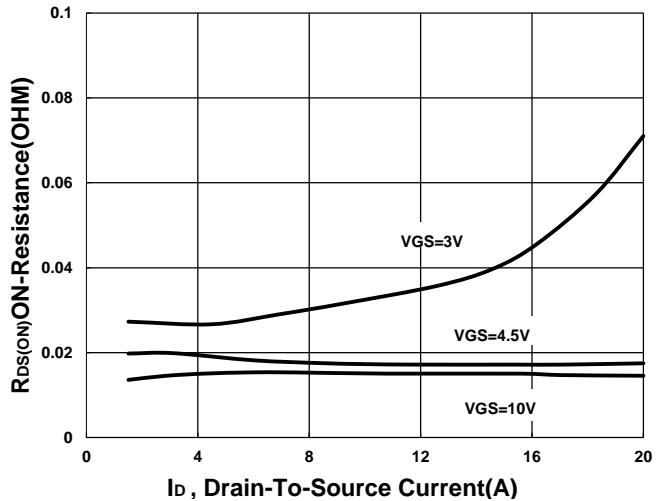
**Transfer Characteristics**



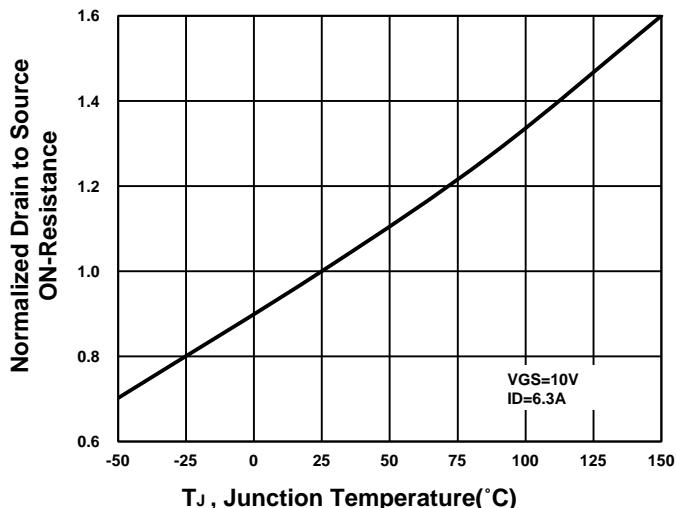
**On-Resistance VS Gate-To-Source Voltage**



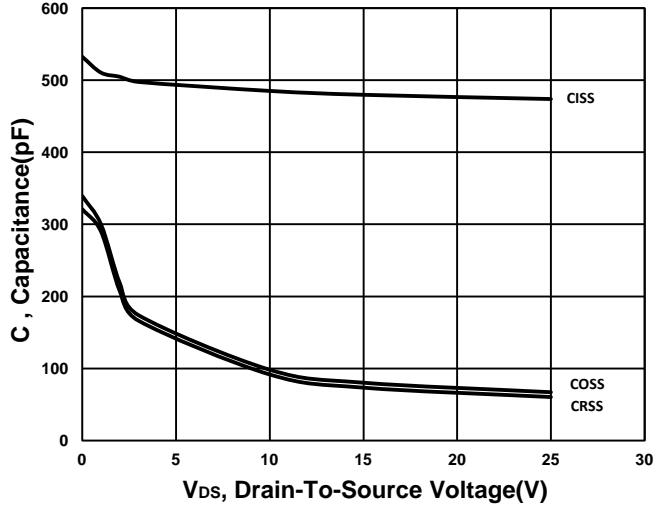
**On-Resistance VS Drain Current**

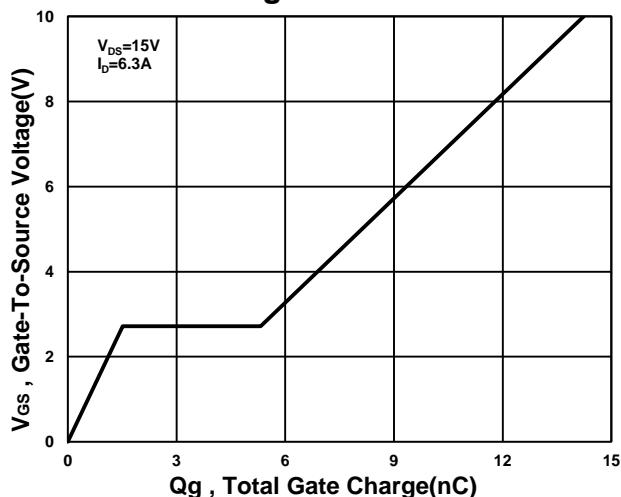
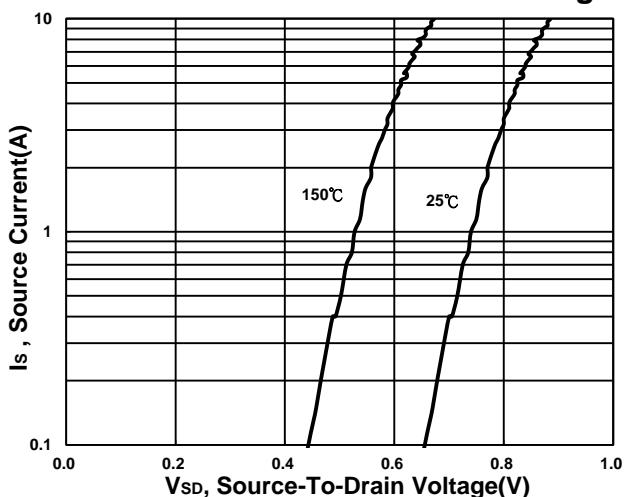
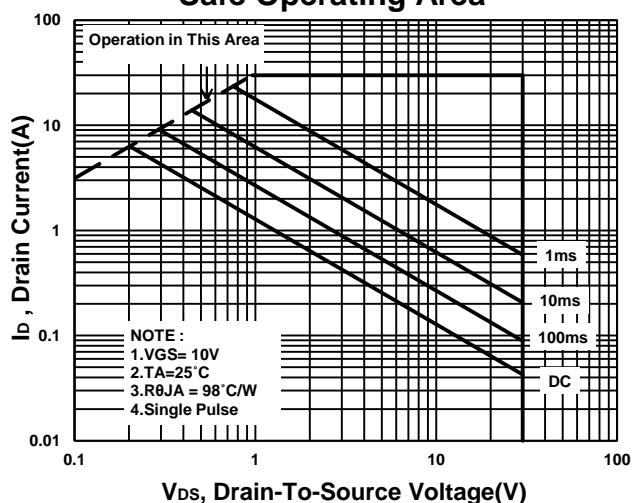
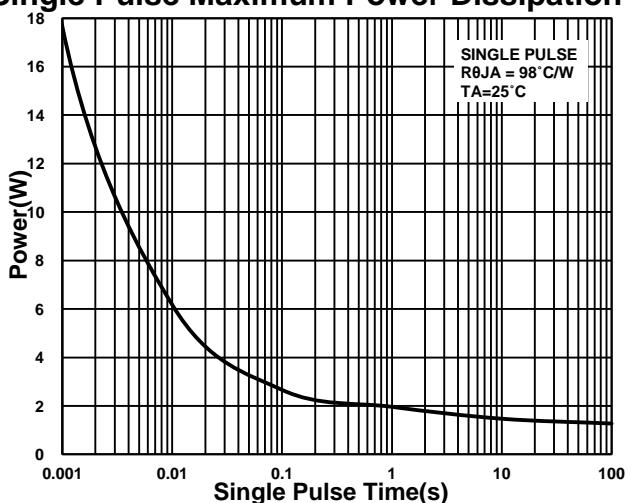


**On-Resistance VS Temperature**



**Capacitance Characteristic**



**NIKO-SEM****N-Channel Enhancement Mode  
Field Effect Transistor****PA520BA  
SOT-23-6  
Halogen-Free & Lead-Free****Gate charge Characteristics****Source-Drain Diode Forward Voltage****Safe Operating Area****Single Pulse Maximum Power Dissipation****Transient Thermal Response Curve**