NIKO-SEM

Dual N-Channel Enhancement Mode Field Effect Transistor

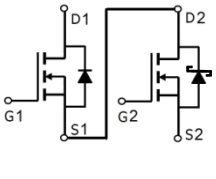
PK630HY

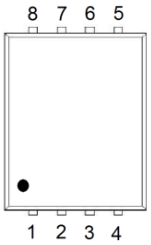
PDFN 5x6P

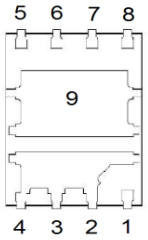
Halogen-Free & Lead-Free

PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
Q2	30V	4.9mΩ	64A
Q1	30V	7.8mΩ	40A







1 : G1
2,3,4 : D1
5,6,7 : S2
8 : G2
9 : S1/D2

RoHS Compliant

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

PARAMETERS/TEST CONDITIONS		SYMBOL	Q2	Q1	UNITS
Drain-Source Voltage		V_{DS}	30	30	V
Gate-Source Voltage		V_{GS}	±20	±20	V
Continuous Drain Current[3]	T_C = 25 °C	I_D	64	40	A
	T_C = 100 °C		40	25	
Pulsed Drain Current[1]		I_{DM}	150	90	
Continuous Drain Current	T_A = 25 °C	I_D	21	14	
	T_A = 70 °C		17	11	
Avalanche Current		I_{AS}	35	21	
Avalanche Energy	L = 0.1mH	E_{AS}	61	22	mJ
Power Dissipation	T_C = 25 °C	P_D	37	24	W
	T_C = 100 °C		15	9.6	
Power Dissipation[4]	T_A = 25 °C	P_D	4	3.1	W
	T_A = 70 °C		2.6	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]	t ≦10s	$R_{\theta JA}$	Q2		30	°C / W
			Q1		40	
	Steady-State	$R_{\theta JA}$	Q2		56	
			Q1		72	
Junction-to-Case		$R_{\theta JC}$	Q2		3.3	
		$R_{\theta JC}$	Q1		5.2	

[1]Pulse width limited by maximum junction temperature $T_{J(MAX)}$=150°C.
[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 :Q1=25A,Q2=25A
[4]The Power dissipation is based on $R_{\theta JA}$ t ≦10s value.

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

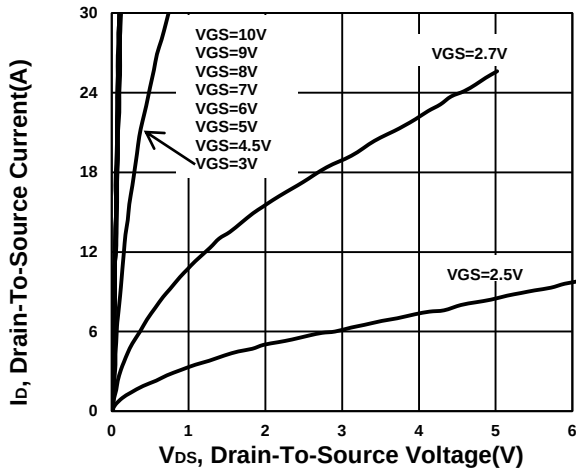
PARAMETER	SYMBOL	TEST CONDITIONS		LIMITS MIN	LIMITS TYP	LIMITS MAX	UNIT
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = 1mA	Q2	30			V
		V_{GS} = 0V, I_D = 250μA	Q1	30			
Drain-Source Breakdown Voltage (transient)	$V_{(BR)DSSt}$	V_{GS} = 0V, $I_{D(aval)}$ = 12.6A T_{case} = 25 °C , $t_{ransient}$ = 100ns	Q2	34			
			Q1	34			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250μA	Q2	1.3	1.6	2.3	
			Q1	1.27	1.36	2.3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	Q2			±100	nA
			Q1			±100	
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V	Q2			0.5	mA
			Q1			1	μA
		V_{DS} = 20V, V_{GS} = 0V, T_J = 55 °C	Q2			5	mA
			Q1			10	μA
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} =4.5V, I_D = 16A	Q2		3.4	5.1	mΩ
		V_{GS} =4.5V, I_D = 11A	Q1		6.8	11	
		V_{GS} = 10V, I_D = 20A	Q2		2.7	4.9	
		V_{GS} = 10V, I_D = 11A	Q1		5.3	7.8	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 20A	Q2		70		S
		V_{DS} = 5V, I_D = 11A	Q1		66		
DYNAMIC							
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = 15V, f = 1MHz	Q2		2148		pF
			Q1		853		
Output Capacitance	C_{oss}		Q2		402		
			Q1		149		
Reverse Transfer Capacitance	C_{rss}		Q2		255		
			Q1		109		
Gate Resistance	R_g	V_{GS} = 0V, V_{DS} = 0V, f = 1MHz	Q2		1.6		Ω
			Q1		0.8		

Total Gate Charge[2]	Q_g	VGS = 10V	Q2 V_{DS} = 15V , V_{GS} = 10V, I_D = 20A Q1 V_{DS} = 15V , V_{GS} = 10V, I_D = 11A	Q2		44	53	nC
				Q1		18	22	
		VGS = 4.5V		Q2		23.3	30.3	
				Q1		10	13	
Gate-Source Charge[2]	Q_{gs}			Q2		5.4		
				Q1		2.1		
Gate-Drain Charge[2]	Q_{gd}			Q2		11		
				Q1		4.8		
Turn-On Delay Time[2]	$t_{d(on)}$		Q2 V_{DS} = 15V , $I_D \cong$ 20A, V_{GS} = 10V, R_{GEN} =6Ω Q1 V_{DS} = 15V , $I_D \cong$ 11A, V_{GS} = 10V, R_{GEN} =6Ω	Q2		30		nS
				Q1		25		
Rise Time[2]	t_r			Q2		20		
				Q1		21		
Turn-Off Delay Time[2]	$t_{d(off)}$			Q2		61		
				Q1		40		
Fall Time[2]	t_f			Q2		22		
				Q1		20		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)								
Continuous Current[3]	I_S			Q2			37	A
				Q1			20	
Forward Voltage[1]	V_{SD}		I_F =20A, V_{GS} = 0V	Q2			1	V
			I_F = 11A, V_{GS} = 0V	Q1			1.2	
Reverse Recovery Time	t_{rr}		Q2 I_F = 20A, dI_F/dt = 100A / μS Q1 I_F = 11A, dI_F/dt = 100A / μS	Q2		21		nS
				Q1		13.5		
Reverse Recovery Charge	Q_{rr}			Q2		6.5		nC
				Q1		4		

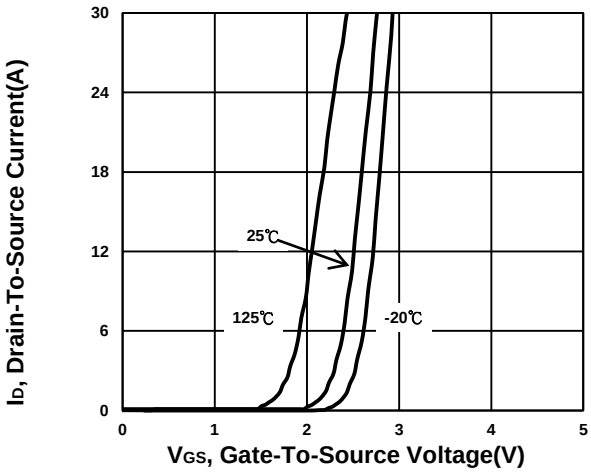
[1]Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.
[3]Package limitation current :Q1=25A,Q2=25A

TYPICAL PERFORMANCE CHARACTERISTICS
Q2

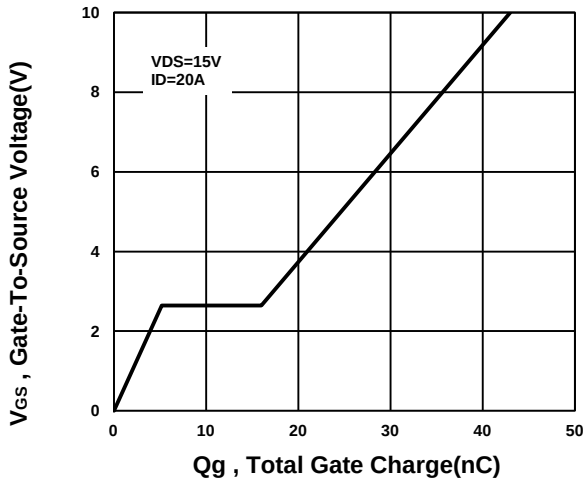
Output Characteristics



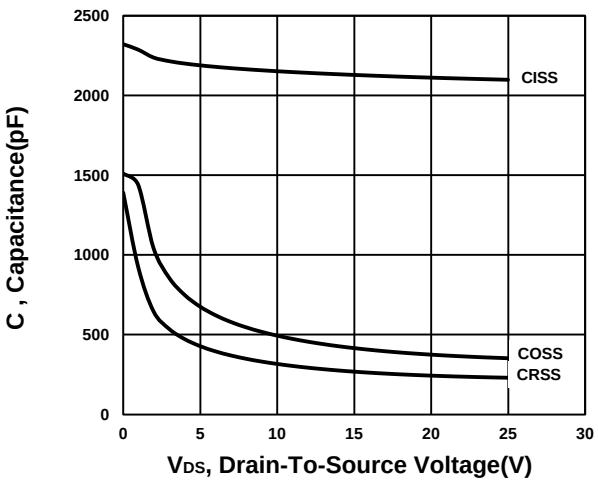
Transfer Characteristics



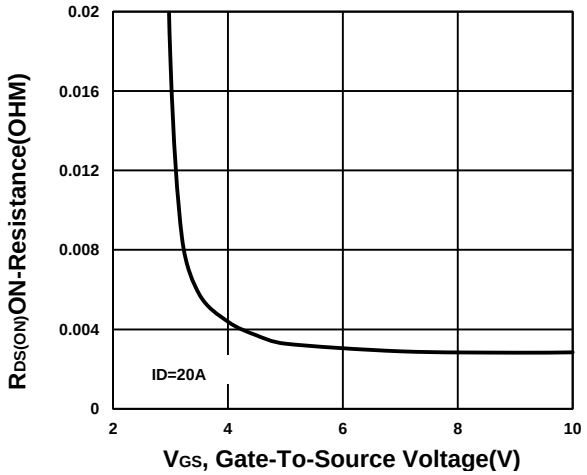
Gate charge Characteristics



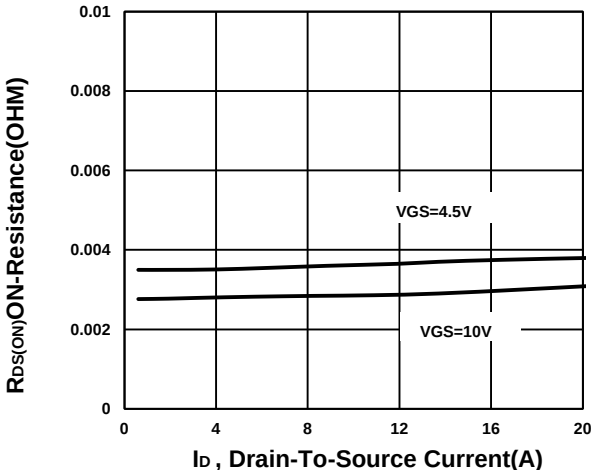
Capacitance Characteristic



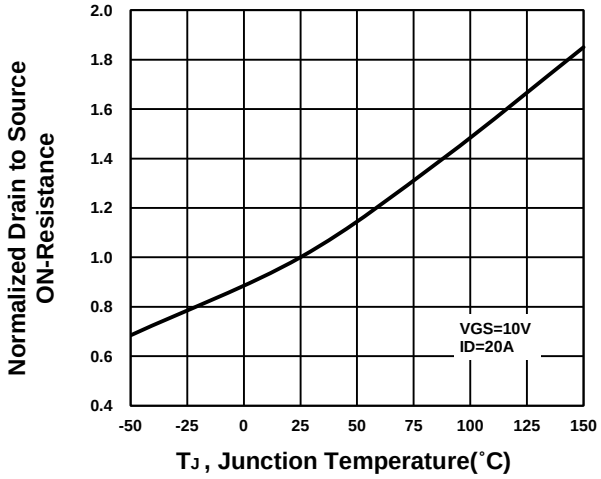
On-Resistance VS Gate-To-Source



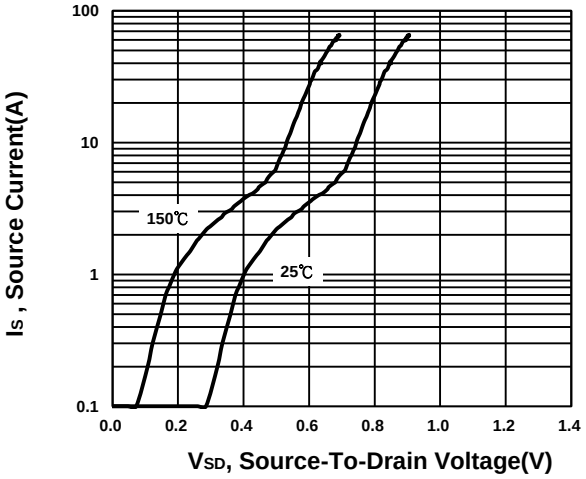
On-Resistance VS Drain Current



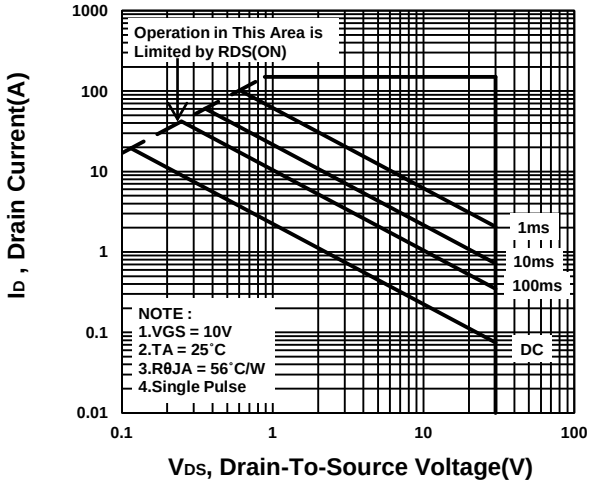
On-Resistance VS Temperature



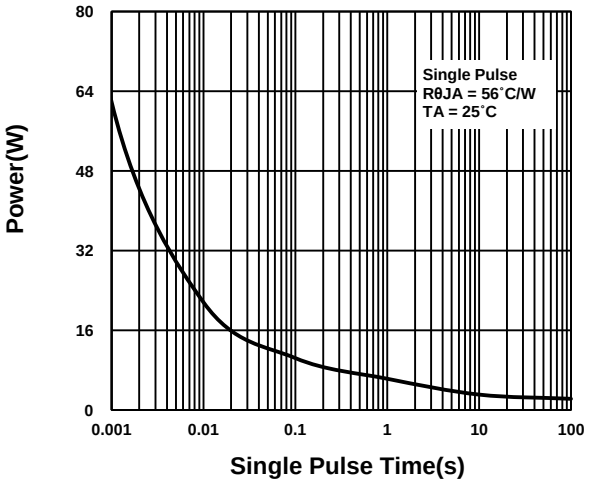
Source-Drain Diode Forward Voltage



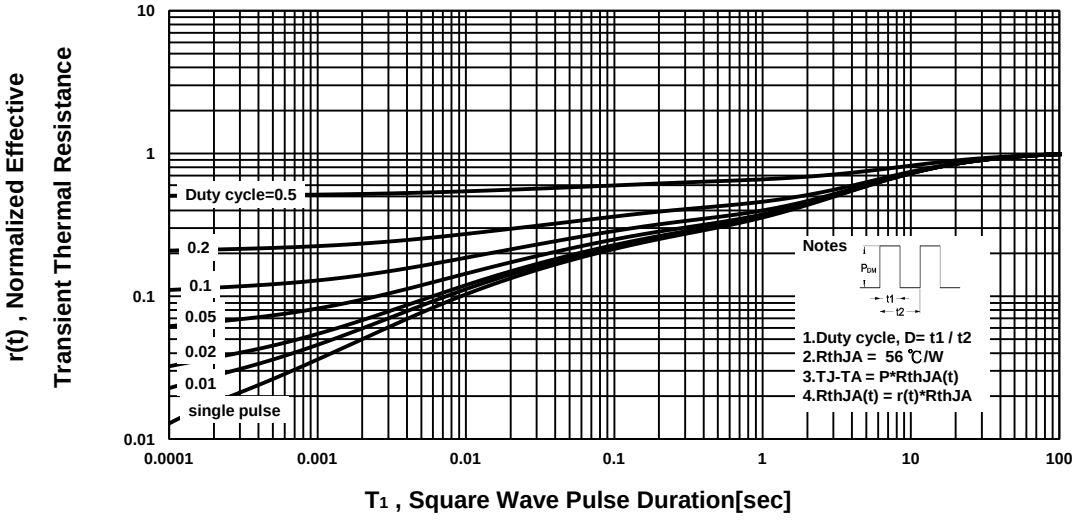
Safe Operating Area



Single Pulse Maximum Power Dissipation

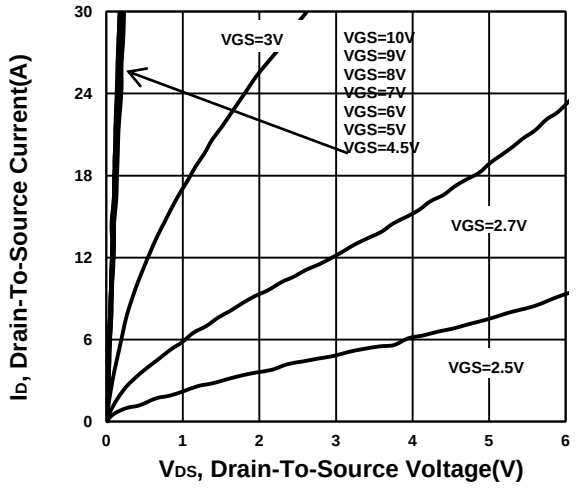


Transient Thermal Response Curve

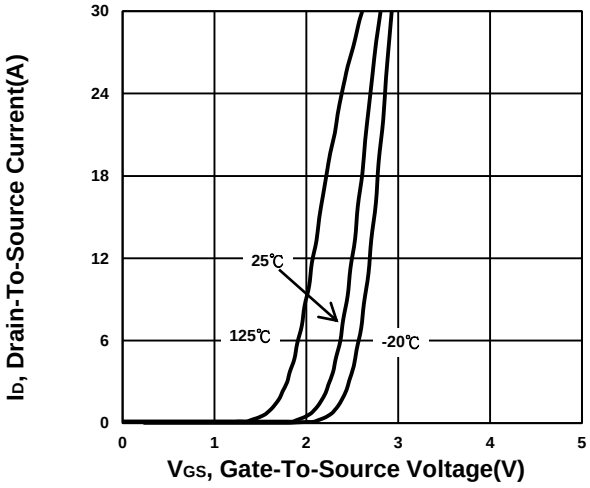


Q1

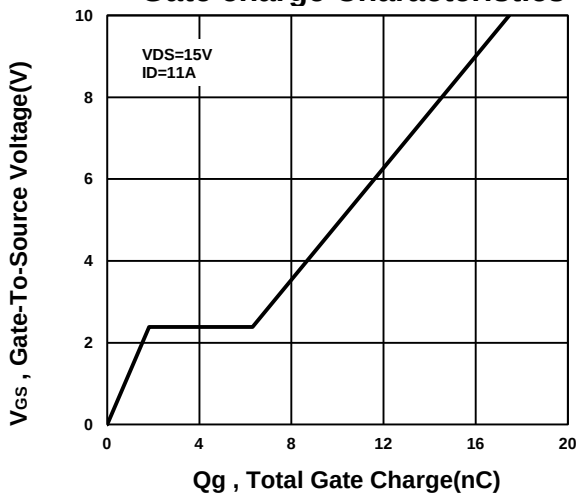
Output Characteristics



Transfer Characteristics



Gate charge Characteristics



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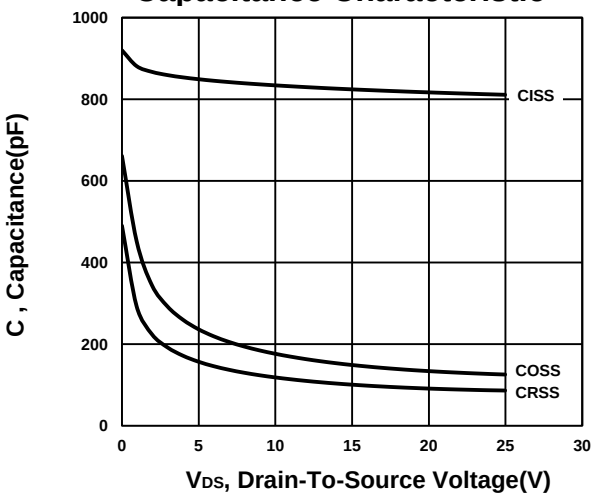
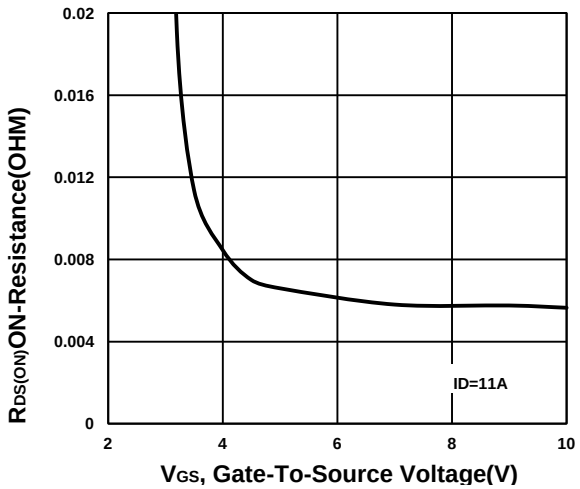
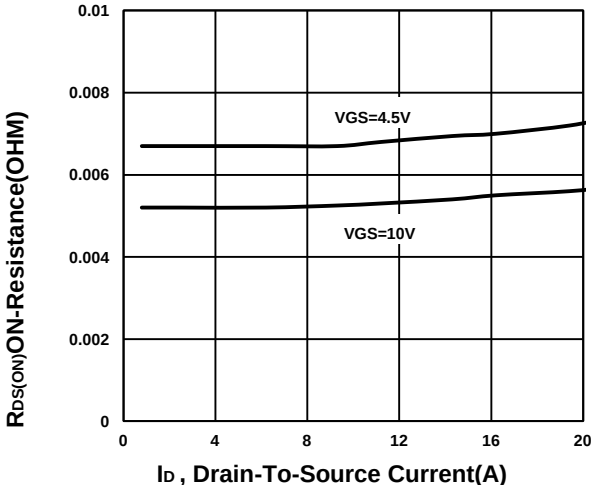


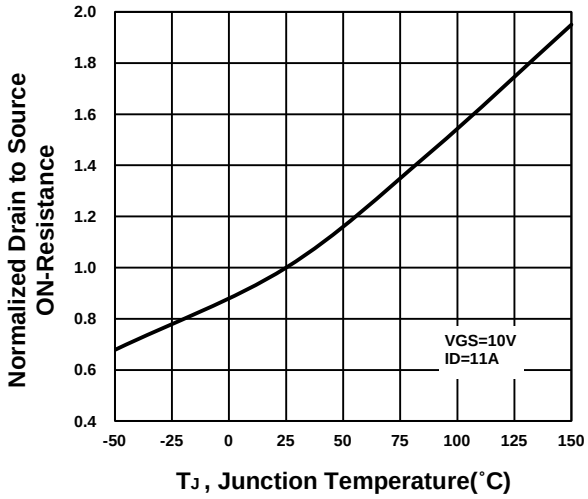
On-Resistance VS Gate-To-Source



On-Resistance VS Drain Current



On-Resistance VS Temperature



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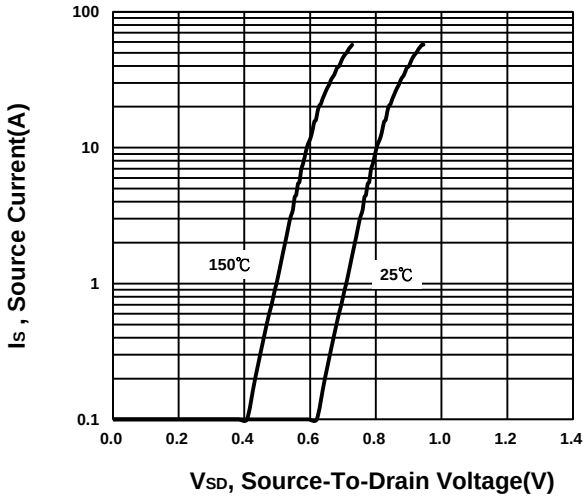

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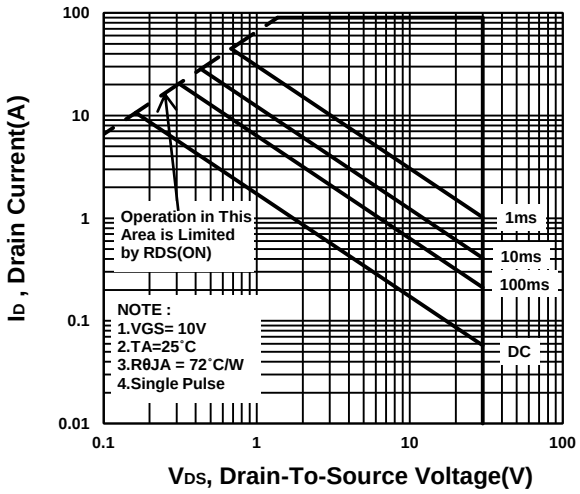

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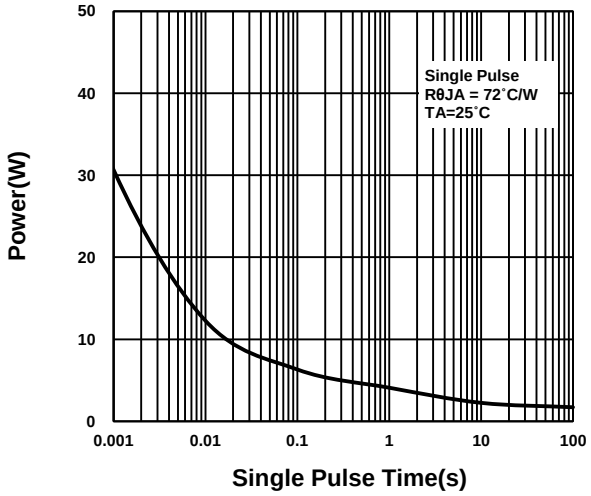

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