NIKO-SEM

N- & P-Channel Enhancement Mode Field Effect Transistor

P5803NAG

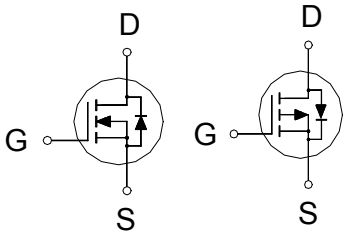
TSOP-6

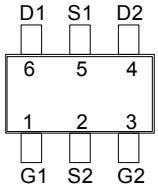
Halogen-Free & Lead-Free

RoHS Compliant

PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
N-Channel	30V	58mΩ	3A
P-Channel	-30V	115mΩ	-2A





G : GATE
D : DRAIN
S : SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	N-Channel	P-Channel	UNITS
Drain-Source Voltage		V_{DS}	30	-30	V
Gate-Source Voltage		V_{GS}	±20	±20	V
Continuous Drain Current	T_A = 25 °C	I_D	3	-2	A
	T_A = 70 °C		2.3	-1.6	
Pulsed Drain Current[1]		I_{DM}	30	-10	
Power Dissipation	T_A = 25 °C	P_D	0.8	0.8	W
	T_A = 70 °C		0.5	0.5	
Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	Device	TYPICAL	MAXIMUM	UNITS
Junction-to- Ambient	$R_{\theta JA}$	N-Ch		160	°C / W
		P-Ch		160	

[1]Pulse width limited by maximum junction temperature.

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	N-Ch	30			V
		V_{GS} = 0V, I_D = -250µA	P-Ch	-30			
Gate Threshold Voltage	$V_{GS(th)}$	V_{DS} = V_{GS}, I_D = 250µA	N-Ch	1	1.2	2.5	
		V_{DS} = V_{GS}, I_D = -250µA	P-Ch	-1	-1.6	-2.5	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V	N-Ch			±100	nA
		V_{DS} = 0V, V_{GS} = ±20V	P-Ch			±100	

Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} = 24V, V_{GS} = 0V	N-Ch			1	μA
		V_{DS} = -24V, V_{GS} = 0V	P-Ch			-1	
		V_{DS} = 20V, V_{GS} = 0V, T_J = 55°C	N-Ch			10	
		V_{DS} = -20V, V_{GS} = 0V, T_J = 55°C	P-Ch			-10	
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = 5V, V_{GS} = 10V	N-Ch	30			A
		V_{DS} =-5V, V_{GS} = -10V	P-Ch	-10			
Drain-Source On-State resistance[1]	$R_{DS(ON)}$	V_{GS} = 4.5V, I_D = 2A	N-Ch		68	88	mΩ
		V_{GS} = -4.5V, I_D = -1.5A	P-Ch		157	185	
		V_{GS} = 10V, I_D = 3.5A	N-Ch		47	58	
		V_{GS} = -10V, I_D = -2.3A	P-Ch		96	115	
Forward Transconductance[1]	g_{fs}	V_{DS} = 5V, I_D = 3.5A	N-Ch		6		S
		V_{DS} = -5V, I_D = -2.3A	P-Ch		4		

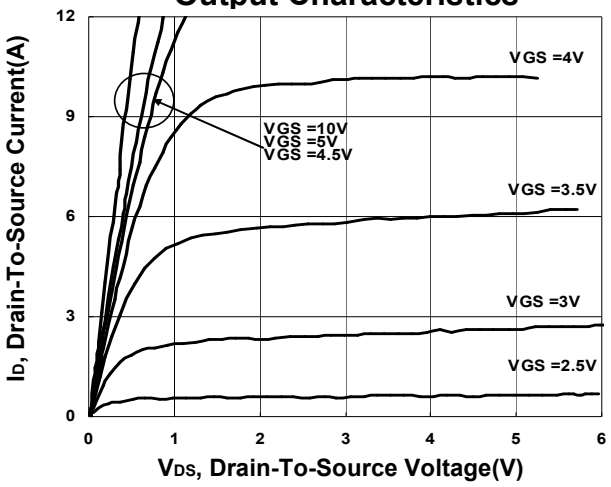
DYNAMIC							
Input Capacitance	C_{iss}	N-Channel V_{GS} = 0V, V_{DS} = 15V, f = 1MHz P-Channel V_{GS} = 0V, V_{DS} = -15V, f = 1MHz	N-Ch		216		pF
			P-Ch		261		
Output Capacitance	C_{oss}		N-Ch		99		
			P-Ch		105		
Reverse Transfer Capacitance	C_{rss}		N-Ch		47		
			P-Ch		48		
Total Gate Charge[2]	Q_g	N-Channel V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 10V I_D = 3.5A P-Channel V_{DS} = 0.5$V_{(BR)DSS}$, V_{GS} = 10V I_D = -2.3A	N-Ch		6.5		nC
			P-Ch		6.5		
Gate-Source Charge[2]	Q_{gs}		N-Ch		1		
			P-Ch		1.1		
Gate-Drain Charge[2]	Q_{gd}		N-Ch		2.3		
			P-Ch		2.1		
Turn-On Delay Time[2]	$t_{d(on)}$	N-Channel V_{DS} = 15V $I_D \cong$ 3.5A,V_{GS} = 10V, R_{GEN} = 6Ω P-Channel V_{DS} = -15V, $I_D \cong$ -2.3A, V_{GS} = -10V, R_{GEN} = 6Ω	N-Ch		7		nS
			P-Ch		7		
Rise Time[2]	t_r		N-Ch		10		
			P-Ch		10		
Turn-Off Delay Time[2]	$t_{d(off)}$		N-Ch		10		
			P-Ch		17		
Fall Time[2]	t_f		N-Ch		4		
			P-Ch		6		

SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current	I_S		N-Ch P-Ch			3 -2	A
Forward Voltage[1]	V_{SD}	I_F = 2.3A, V_{GS} = 0V	N-Ch			1.3	V
		I_F = -2.1A, V_{GS} = 0V	P-Ch			-1.3	
Reverse Recovery Time	t_{rr}	I_F = 3.5A, dI_F/dt = 100A / µS	N-Ch P-Ch		12.7 12.4		nS
Reverse Recovery Charge	Q_{rr}	I_F = -2.3A, dI_F/dt = 100A / µS	N-Ch P-Ch		6 5		nC

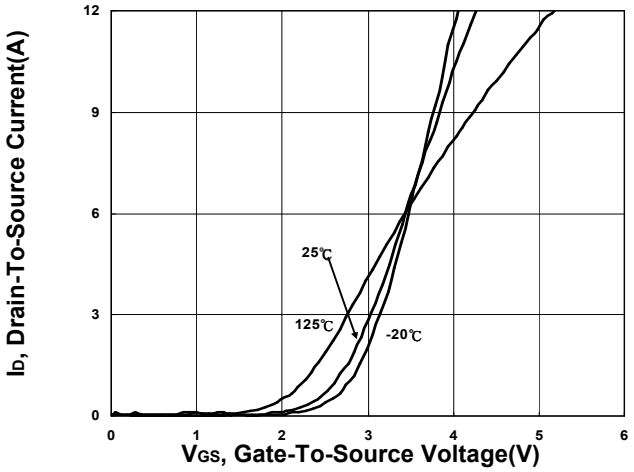
[1]Pulse test : Pulse Width ≤ 300 µsec, Duty Cycle ≤ 2%.
[2]Independent of operating temperature.

TYPICAL PERFORMANCE CHARACTERISTICS
N-CHANNEL

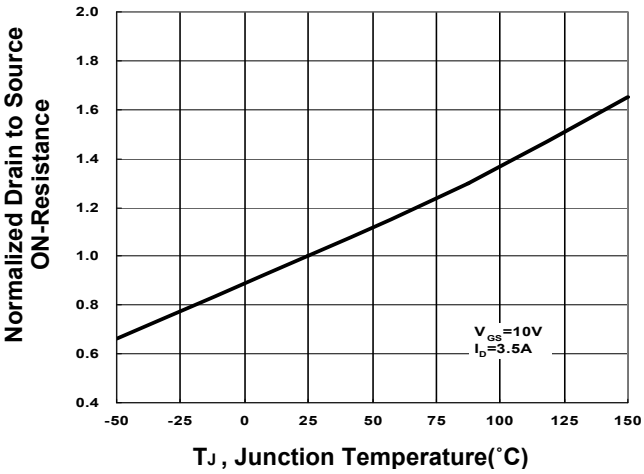
Output Characteristics



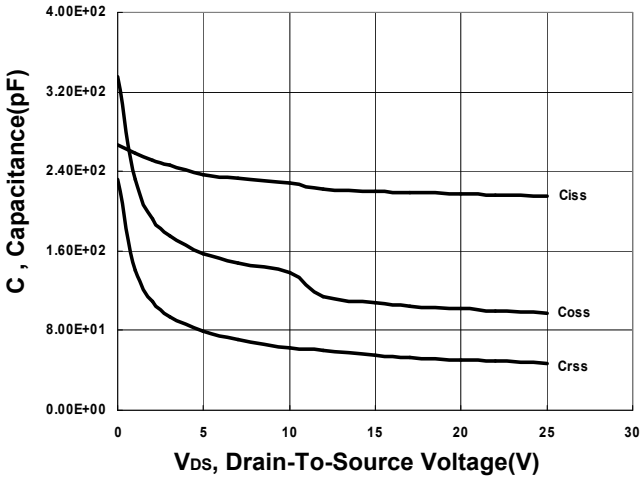
Transfer Characteristics



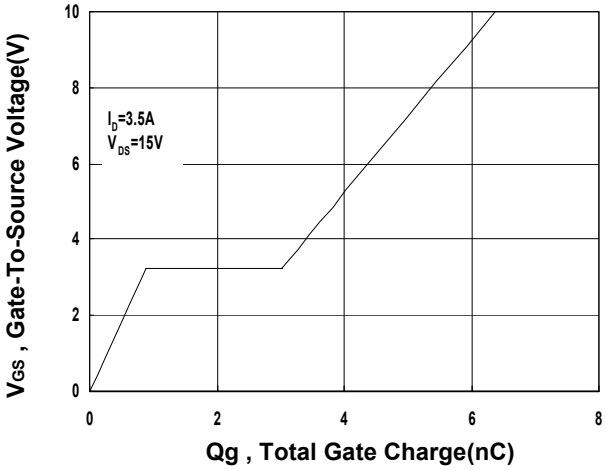
On-Resistance VS Temperature



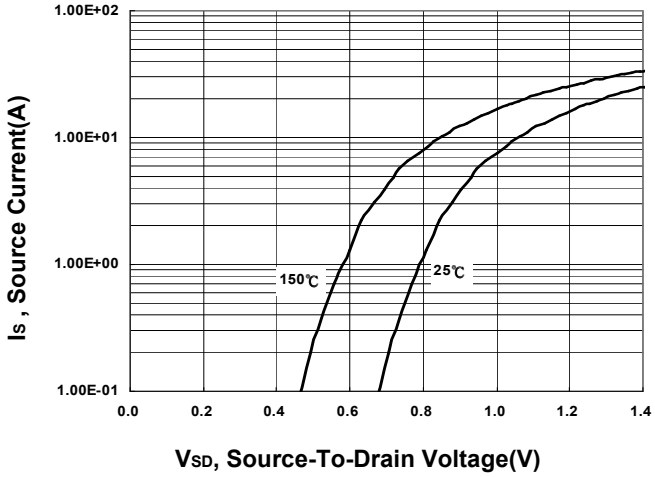
Capacitance Characteristic



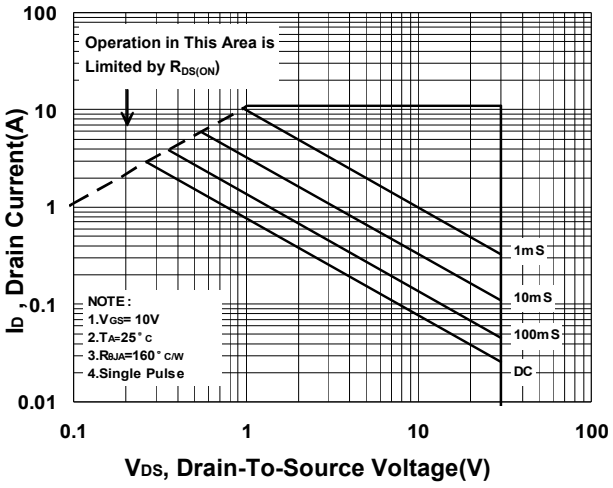
Gate charge Characteristics



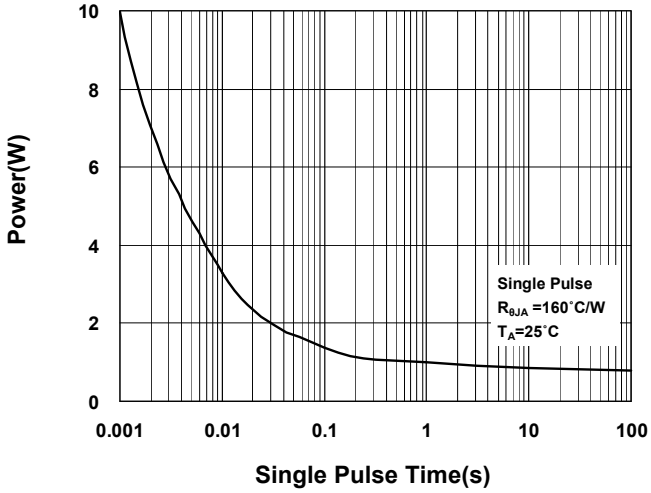
Source-Drain Diode Forward Voltage



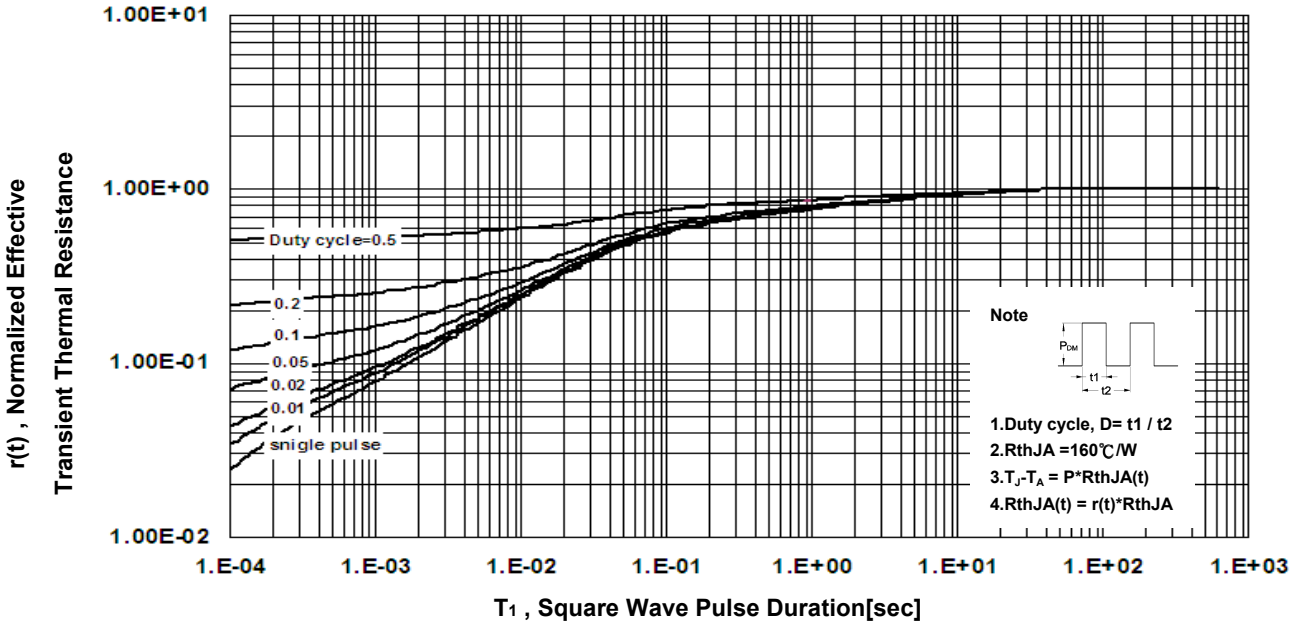
Safe Operating Area



Single Pulse Maximum Power Dissipation

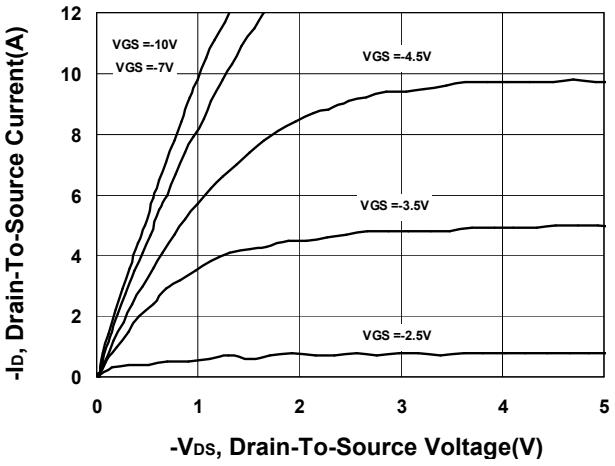


Transient Thermal Response Curve

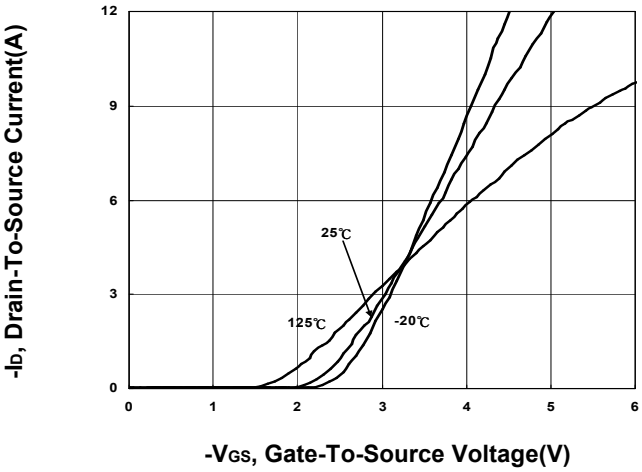


TYPICAL PERFORMANCE CHARACTERISTICS
P-CHANNEL

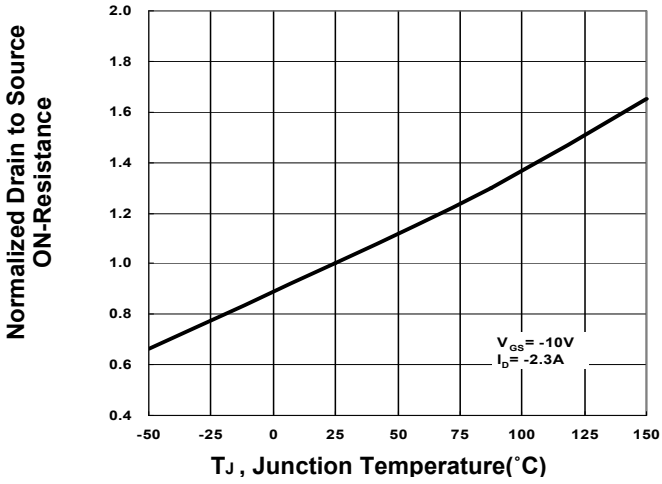
Output Characteristics



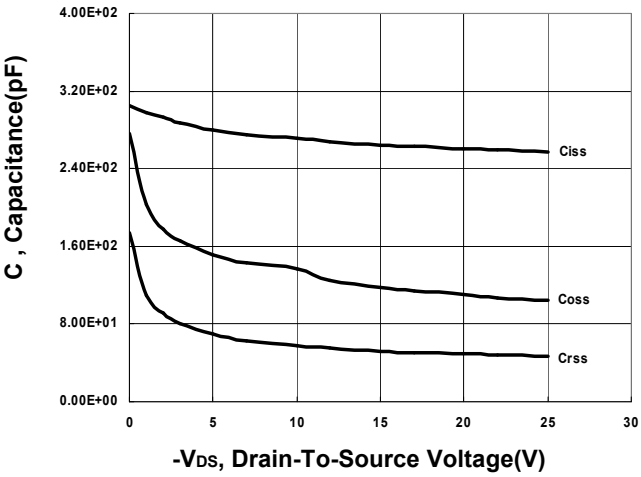
Transfer Characteristics



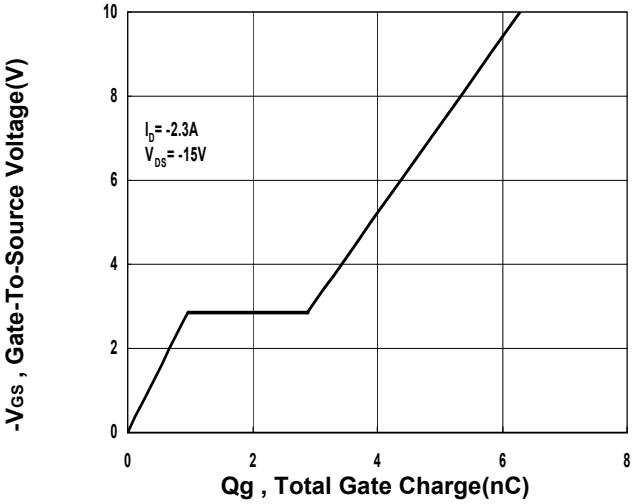
On-Resistance VS Temperature



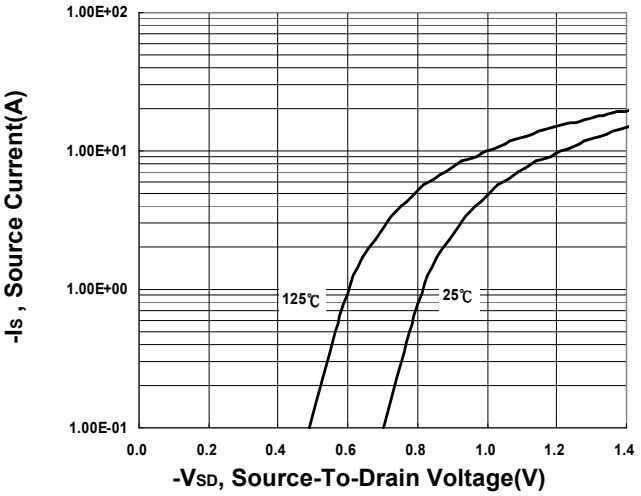
Capacitance Characteristic



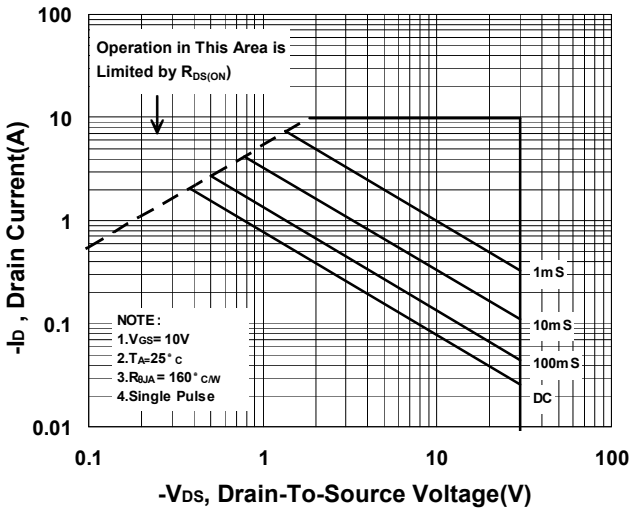
Gate charge Characteristics



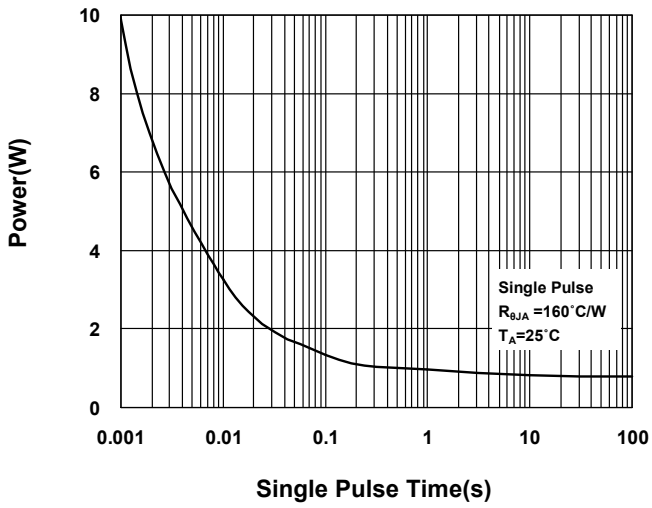
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve