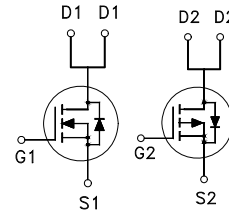




PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
N-Channel	30V	59mΩ	4.5A
P-Channel	-30V	59mΩ	-4.5A

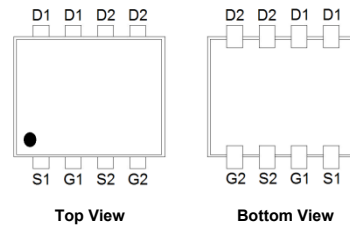


Features

- Pb-Free, Halogen Free and RoHS compliant.
- Low $R_{DS(on)}$ to Minimize Conduction Losses.
- Ohmic Region Good $R_{DS(on)}$ Ratio.
- Optimized Gate Charge to Minimize Switching Losses.

Applications

- Protection Circuits Applications.
- Logic/Load Switch Circuits Applications.



ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ °C}$ 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	$T_A = 25\text{ °C}$	I_D	4.5	-4.5	A
	$T_A = 70\text{ °C}$		3.6	-3.6	
Pulsed Drain Current ^{1,4}		I_{DM}	30	-30	
Avalanche Current		I_{AS}	8.9	-14.3	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	3.9	10.2	mJ
Power Dissipation ³	$T_A = 25\text{ °C}$	P_D	1.78	1.78	W
	$T_A = 70\text{ °C}$		1.14	1.14	
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 _{θJA}	N-ch		70	°C / W
	Steady-State				119	
Junction-to-Ambient ²	t ≤ 10s	R _{θJA}	P-ch		70	
	Steady-State				116	

¹Pulse width limited by maximum junction temperature.

²The value of R_{θJA} is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with T_A =25°C.

³The Power dissipation is based on R_{θJA} t ≤ 10s value.

⁴Pulse Width ≤ 10 μsec, Duty Cycle ≤ 1%.

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	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	1.2	1.6	2.2	V
		V _{DS} = V _{GS} , I _D = -250μA	P-Ch	-1.2	-1.8	-2.3	
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} = 24V, V _{GS} = 0V, T _J = 55 °C	N-Ch			10	
		V _{DS} = -24V, V _{GS} = 0V, T _J = 55 °C	P-Ch			-10	
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 4.5V, I _D = 1A	N-Ch		67	119	mΩ
		V _{GS} = -4.5V, I _D = -1A	P-Ch		51	100	
		V _{GS} = 10V, I _D = 2A	N-Ch		42	59	
		V _{GS} = -10V, I _D = -2A	P-Ch		34	59	
Forward Transconductance ¹	g _{fs}	V _{DS} = 10V, I _D = 2A	N-Ch		5		S
		V _{DS} = -10V, I _D = -2A	P-Ch		9		

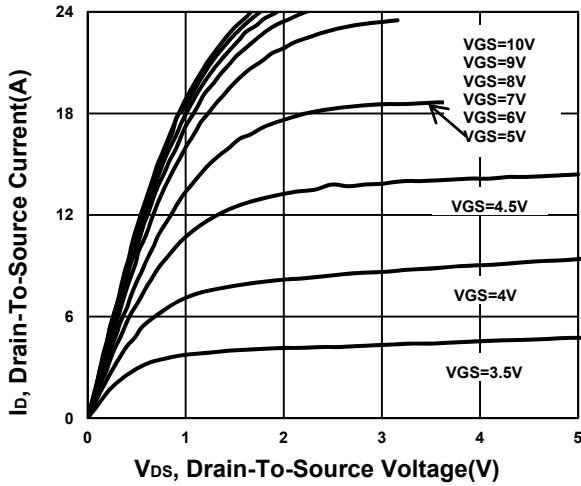
DYNAMIC							
Input Capacitance	C_{iss}		N-Ch P-Ch		253 618		
Output Capacitance	C_{oss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$	N-Ch P-Ch		56 98		pF
Reverse Transfer Capacitance	C_{rss}	$V_{GS} = 0V, V_{DS} = -15V, f = 1MHz$	N-Ch P-Ch		35 67		
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$	N-Ch P-Ch		2 13		Ω
Total Gate Charge ²	Q_g	N-Channel $V_{DS} = 15V, V_{GS} = 10V,$ $I_D = 2A$	N-Ch P-Ch		5.5 12		nC
Gate-Source Charge ²	Q_{gs}	P-Channel $V_{DS} = -15V, V_{GS} = -10V,$ $I_D = -2A$	N-Ch P-Ch		0.9 1.6		
Gate-Drain Charge ²	Q_{gd}		N-Ch P-Ch		1.6 2.6		
Turn-On Delay Time ²	$t_{d(on)}$	N-Channel $V_{DS} = 15V,$ $I_D \cong 2A, V_{GS} = 10V,$ $R_{GEN} = 6\Omega$	N-Ch P-Ch		9 10		nS
Rise Time ²	t_r	P-Channel $V_{DS} = -15V,$ $I_D \cong -2A, V_{GS} = -10V,$ $R_{GEN} = 6\Omega$	N-Ch P-Ch		21 37		
Turn-Off Delay Time ²	$t_{d(off)}$		N-Ch P-Ch		18 50		
Fall Time ²	t_f		N-Ch P-Ch		11 40		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25^\circ C$)							
Continuous Current	I_S		N-Ch P-Ch			1.4 -1.4	A
Forward Voltage ¹	V_{SD}	$I_F = 2A, V_{GS} = 0V$	N-Ch			1.2	V
		$I_F = -2A, V_{GS} = 0V$	P-Ch			-1.2	
Reverse Recovery Time	t_{rr}	$I_F = 2A, di_F/dt = 100A / \mu S$	N-Ch P-Ch		11 9.8		nS
Reverse Recovery Charge	Q_{rr}	$I_F = -2A, di_F/dt = 100A / \mu S$	N-Ch P-Ch		2.6 1.7		nC

¹Pulse test : Pulse Width $\leq 300 \mu sec$, Duty Cycle $\leq 2\%$.

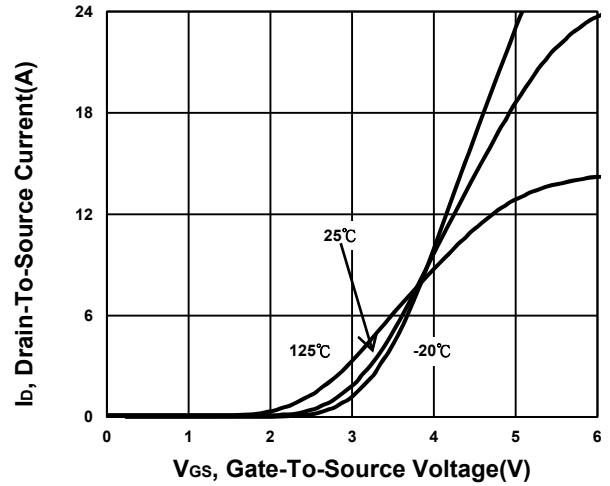
²Independent of operating temperature.

**TYPICAL PERFORMANCE CHARACTERISTICS
N-CHANNEL**

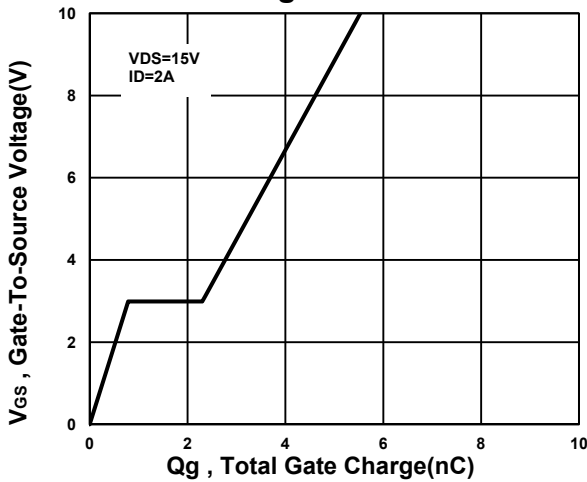
Output Characteristics



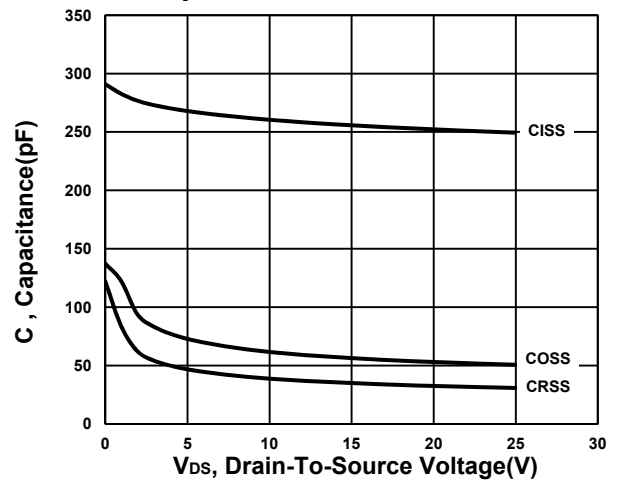
Transfer Characteristics



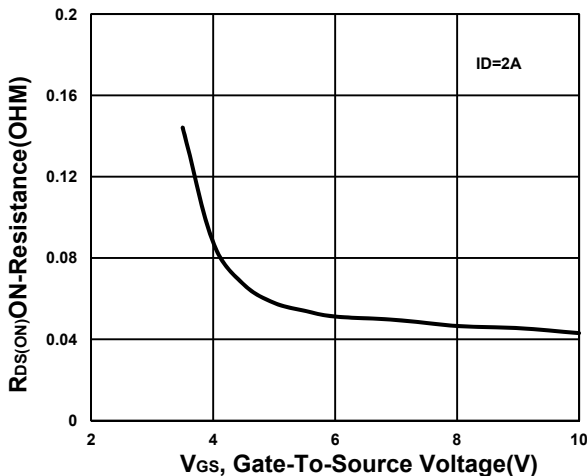
Gate charge Characteristics



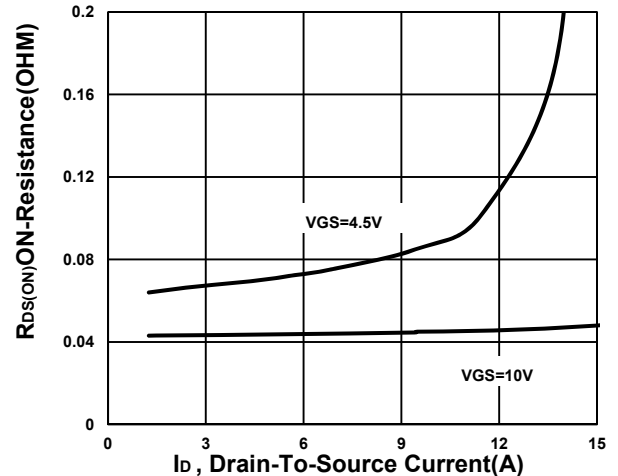
Capacitance Characteristic



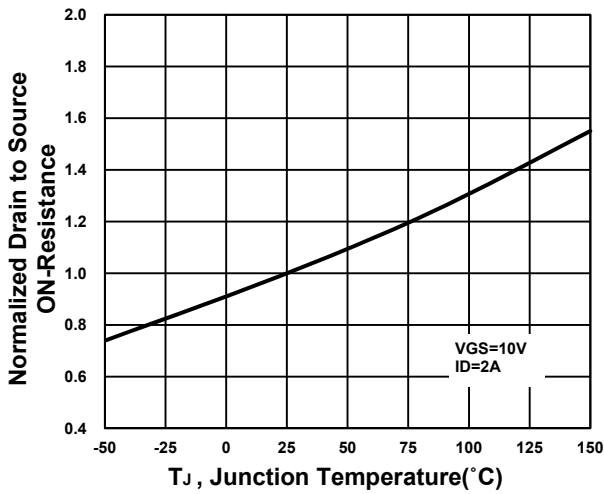
On-Resistance VS Gate-To-Source



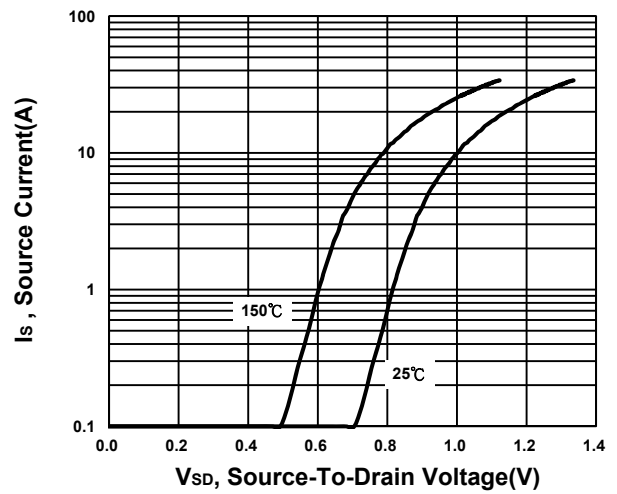
On-Resistance VS Drain Current



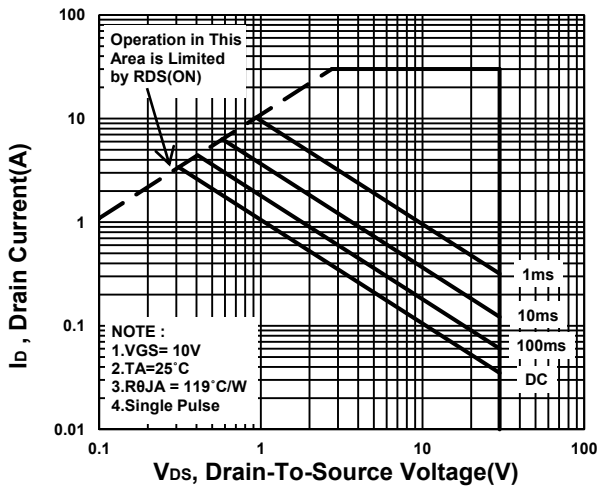
On-Resistance VS Temperature



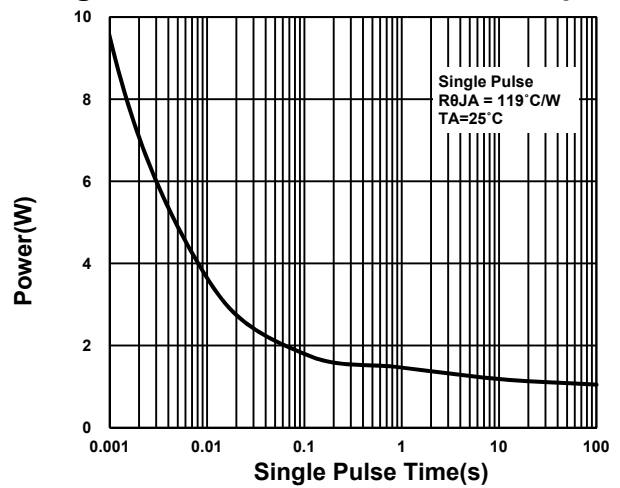
Source-Drain Diode Forward Voltage



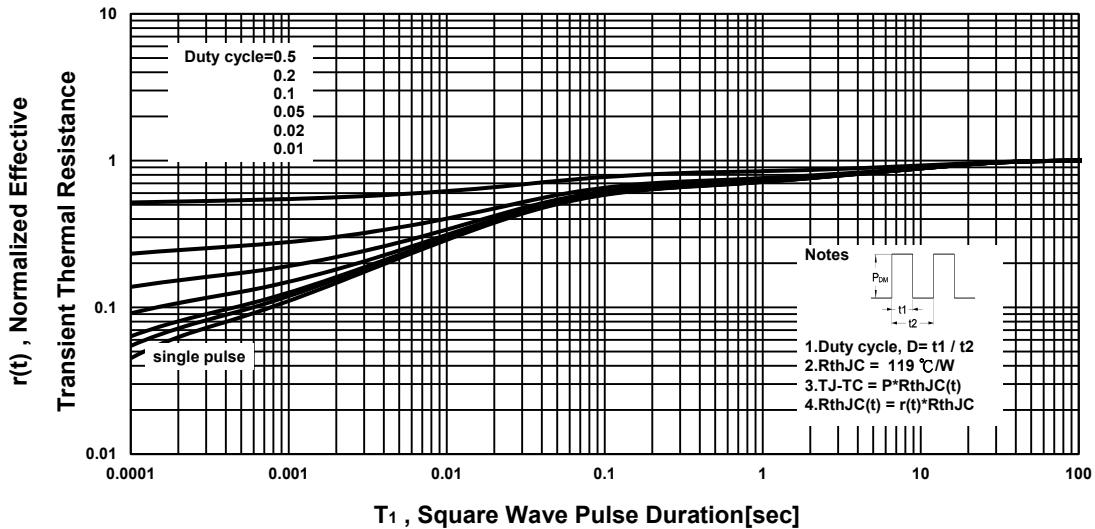
Safe Operating Area



Single Pulse Maximum Power Dissipation

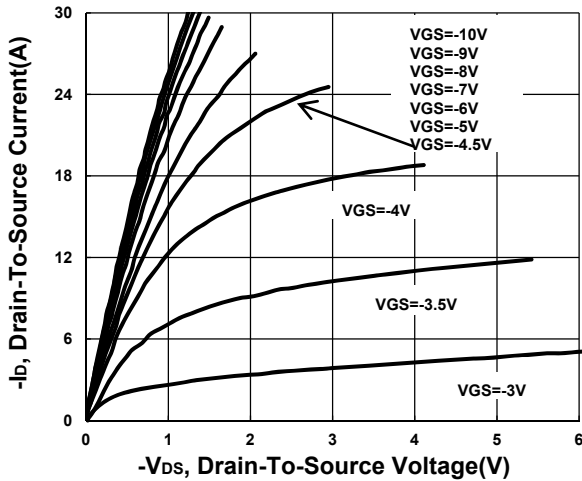


Transient Thermal Response Curve

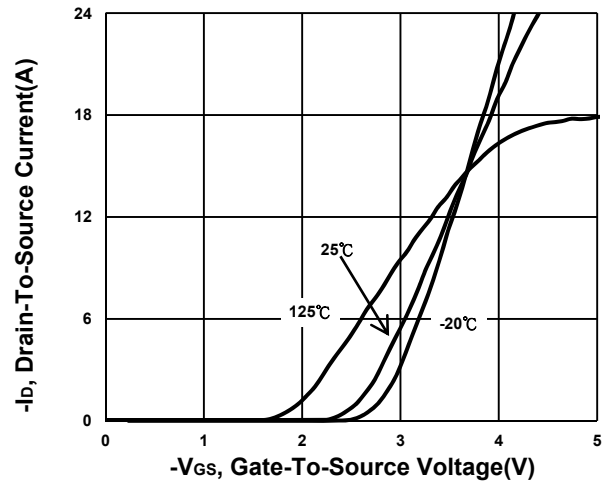


P-CHANNEL

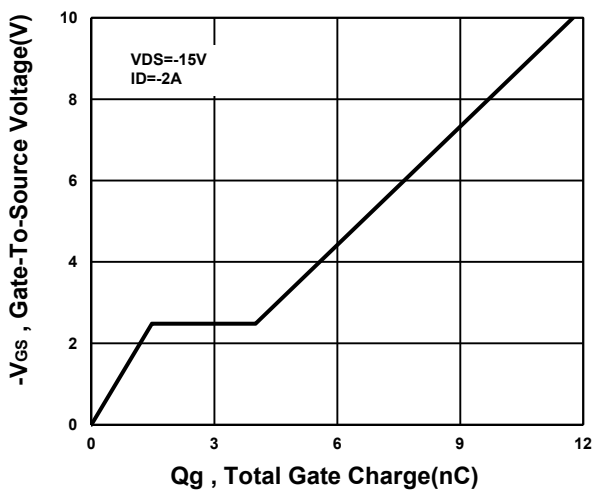
Output Characteristics



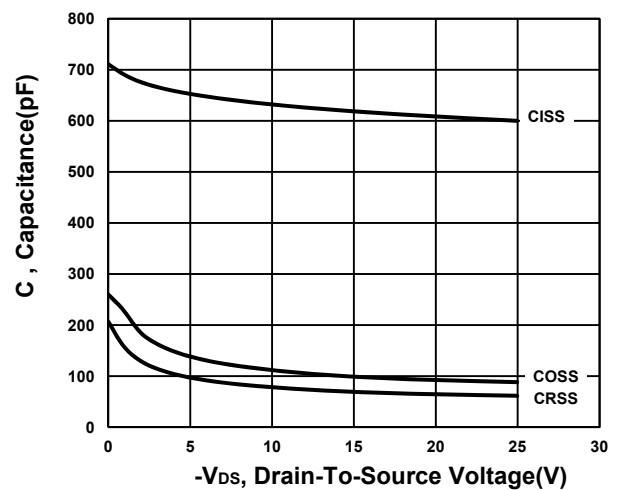
Transfer Characteristics



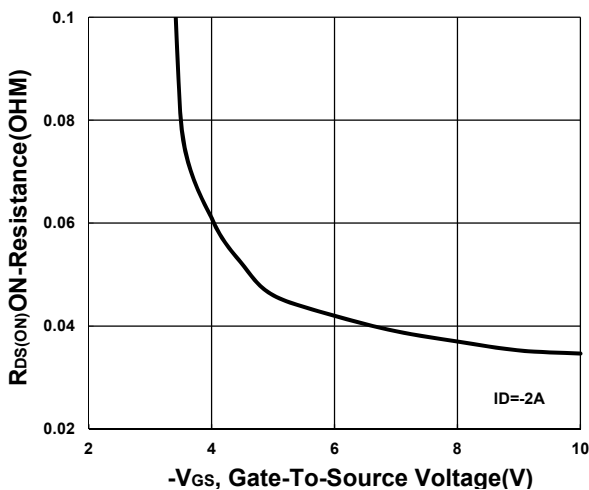
Gate charge Characteristics



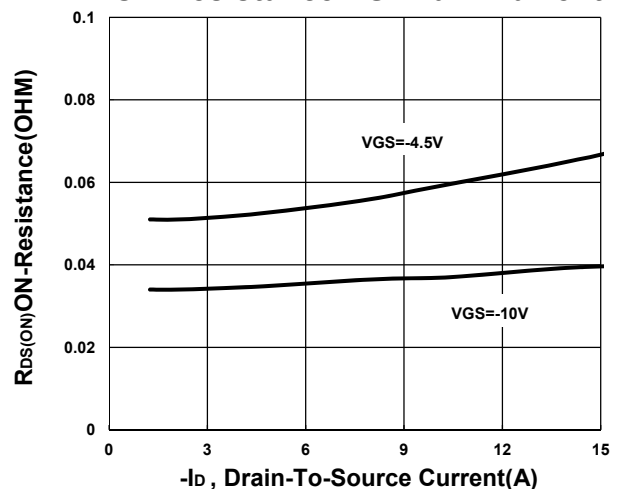
Capacitance Characteristic

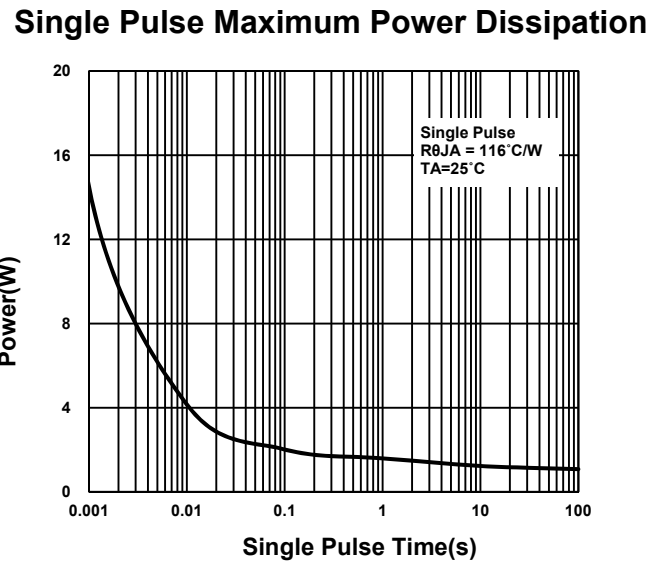
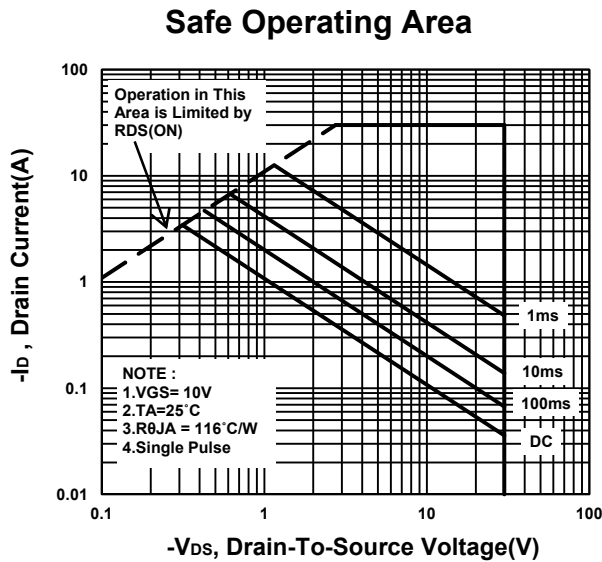
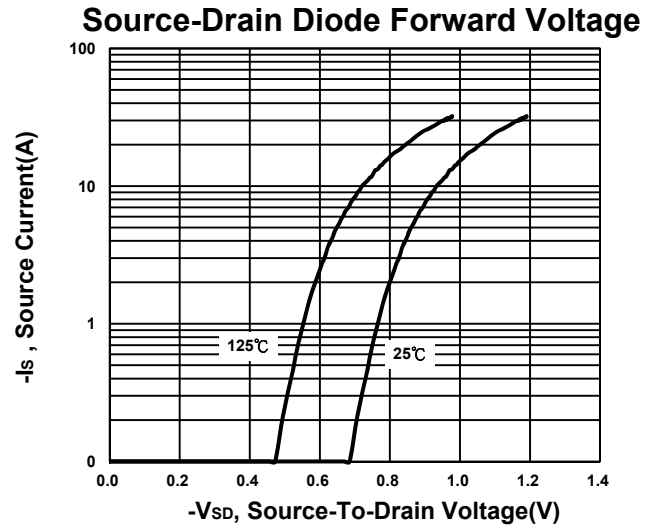
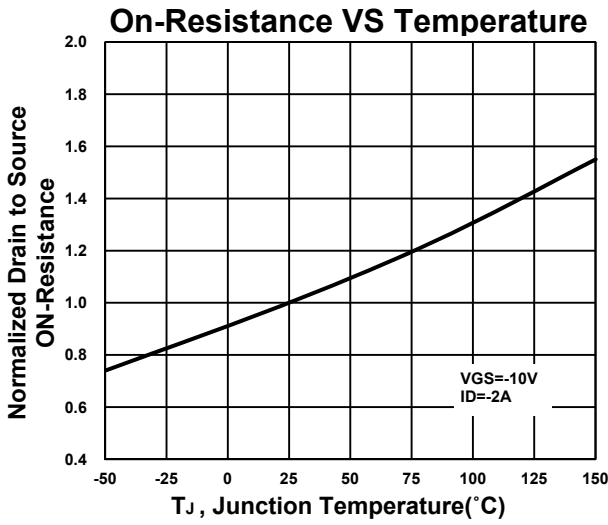


On-Resistance VS Gate-To-Source



On-Resistance VS Drain Current





Transient Thermal Response Curve

