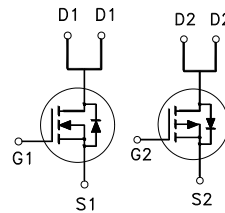




PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
N-Channel	20V	30mΩ	6A
P-Channel	-20V	75mΩ	-3.8A

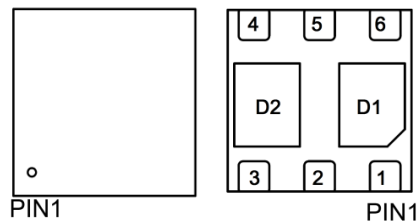


Features

- 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.
- DC Motor for BLDC Applications.



- 1 : S1. 4 : S2.
 - 2 : G1. 5 : G2.
 - 3 : D2. 6 : D1.
- 100% UIS Tested
100% Rg Tested

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}	20	-20	V
Gate-Source Voltage		V_{GS}	±8	±8	V
Continuous Drain Current	$T_A = 25\text{ °C}$	I_D	6	-3.8	A
	$T_A = 70\text{ °C}$		4.8	-3	
Pulsed Drain Current ¹		I_{DM}	20	-15	
Power Dissipation ³	$T_A = 25\text{ °C}$	P_D	1.9	1.9	W
	$T_A = 70\text{ °C}$		1.2	1.2	
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	$t \leq 10s$	$R_{\theta JA}$	N-ch	63	°C / W
			P-ch	63	
Junction-to-Ambient ²	Steady-State		N-ch	97	
			P-ch	97	

¹Pulse width limited by maximum junction temperature.

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

³The Power dissipation is based on $R_{\theta JA} t \leq 10s$ value.

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	20		V	
		V _{GS} = 0V, I _D = -250μA	P-Ch	-20			
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	N-Ch	0.5	0.7	1	V
		V _{DS} = V _{GS} , I _D = -250μA	P-Ch	-0.3	-0.6	-1	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±8V	N-Ch			±100	nA
		V _{DS} = 0V, V _{GS} = ±8V	P-Ch			±100	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 16V, V _{GS} = 0V	N-Ch			1	μA
		V _{DS} = -16V, V _{GS} = 0V	P-Ch			-1	
		V _{DS} = 10V, V _{GS} = 0V, T _J = 55 °C	N-Ch			10	
		V _{DS} = -10V, 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 = 5A	N-Ch		25	30	mΩ
		V _{GS} = -4.5V, I _D = -2.5A	P-Ch		60	75	
		V _{GS} = 2.5V, I _D = 4.5A	N-Ch		29	38	
		V _{GS} = -2.5V, I _D = -2A	P-Ch		73	90	
		V _{GS} = 1.8V, I _D = 2A	N-Ch		36	55	
		V _{GS} = -1.8V, I _D = -1A	P-Ch		91	125	
Forward Transconductance ¹	g _{fs}	V _{DS} = 10V, I _D = 5A	N-Ch		26		S
		V _{DS} = -10V, I _D = -2.5A	P-Ch		10		
DYNAMIC							
Input Capacitance	C _{iss}	N-Channel V _{GS} = 0V, V _{DS} = 10V, f = 1MHz	N-Ch		510		pF
Output Capacitance	C _{oss}		P-Channel V _{GS} = 0V, V _{DS} = 10V, f = 1MHz	N-Ch		83	
Reverse Transfer Capacitance	C _{rss}	V _{GS} = 0V, V _{DS} = -10V, f = 1MHz	P-Ch		82		
			N-Ch		67		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	P-Ch		61		
			N-Ch		1.9		Ω
			P-Ch		7.4		

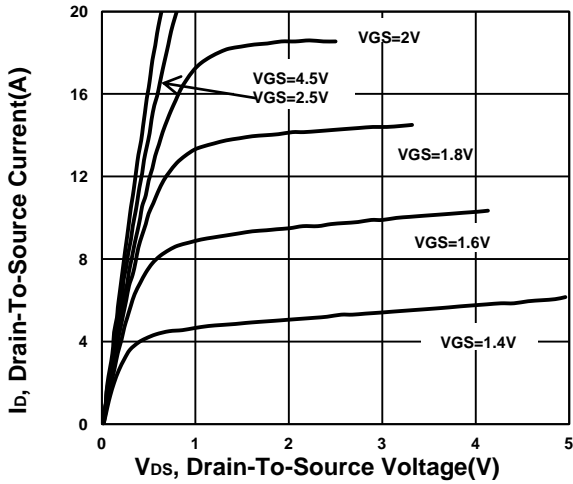
Total Gate Charge ²	Q_g	N-Channel $V_{DS} = 10V, V_{GS} = 4.5V,$ $I_D = 5A$ P-Channel $V_{DS} = -10V, V_{GS} = -4.5V,$ $I_D = -2.5A$	N-Ch		7.3		nC
Gate-Source Charge ²	Q_{gs}		N-Ch		0.6		
Gate-Drain Charge ²	Q_{gd}		P-Ch		0.7		
Turn-On Delay Time ²	$t_{d(on)}$	N-Channel $V_{DS} = 10V,$ $I_D \cong 5A, V_{GS} = 4.5V, R_{GEN} = 6\Omega$ P-Channel $V_{DS} = -10V,$ $I_D \cong -2.5A, V_{GS} = -4.5V,$ $R_{GEN} = 6\Omega$	N-Ch		11		nS
Rise Time ²	t_r		P-Ch		8.2		
Turn-Off Delay Time ²	$t_{d(off)}$		N-Ch		94		
Fall Time ²	t_f		P-Ch		33		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current	I_S		N-Ch			1.9	A
			P-Ch			-1.6	
Forward Voltage ¹	V_{SD}		N-Ch			1	V
			P-Ch			-1.2	
Reverse Recovery Time	t_{rr}	$I_F = 5A, di_F/dt = 100A / \mu S$	N-Ch			9	nS
			P-Ch			10	
Reverse Recovery Charge	Q_{rr}	$I_F = -2.5A, di_F/dt = 100A / \mu S$	N-Ch			3	nC
			P-Ch			3	

¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

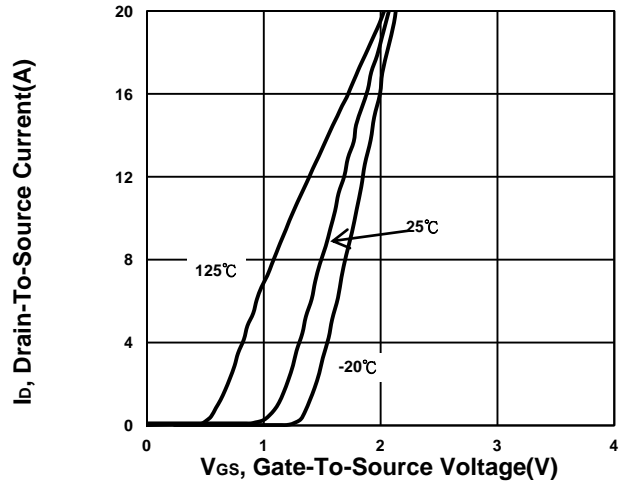
²Independent of operating temperature.

**TYPICAL PERFORMANCE CHARACTERISTICS
N-CHANNEL**

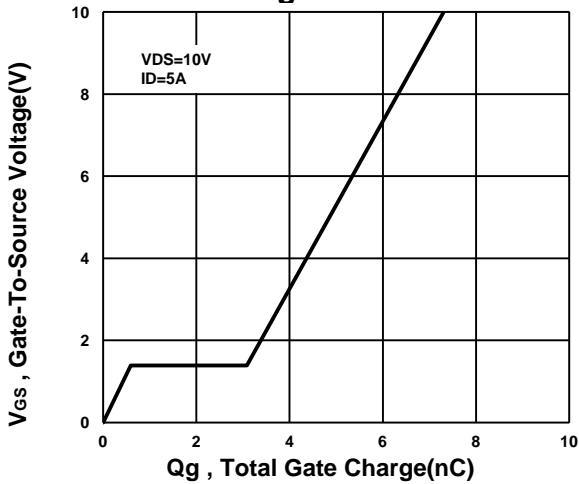
Output Characteristics



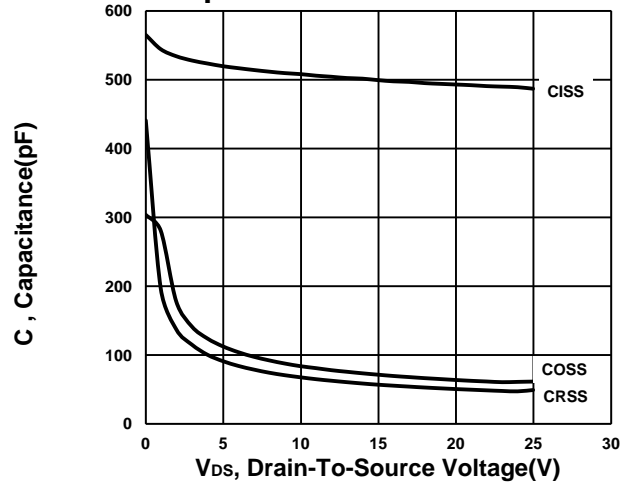
Transfer Characteristics



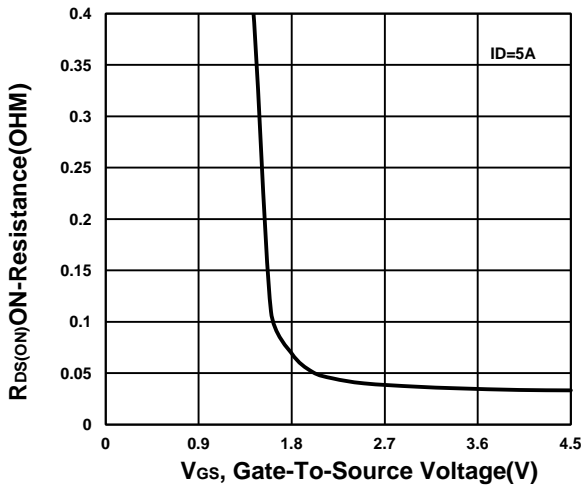
Gate charge Characteristics



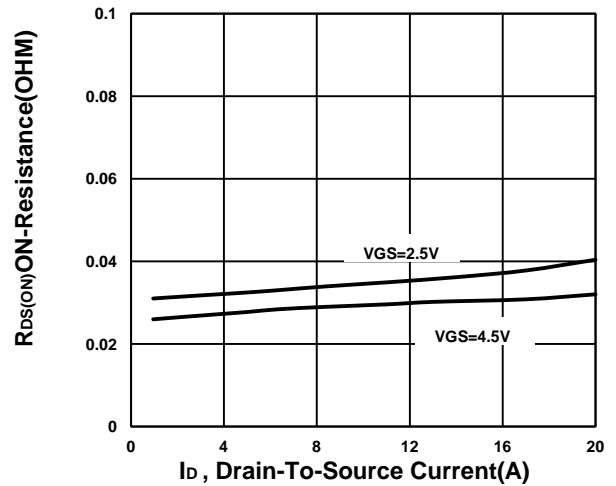
Capacitance Characteristic



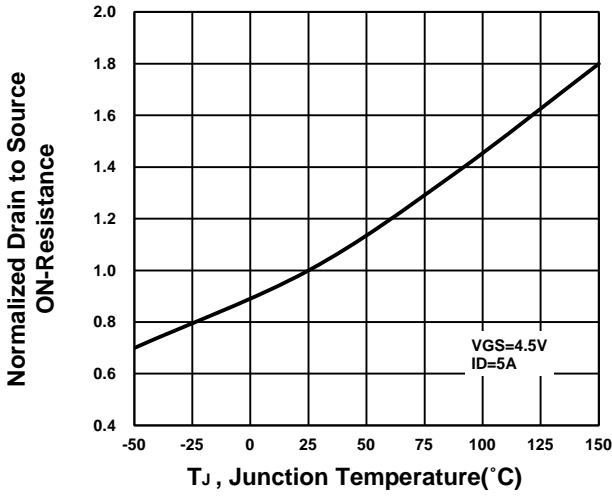
On-Resistance VS Gate-To-Source Voltage



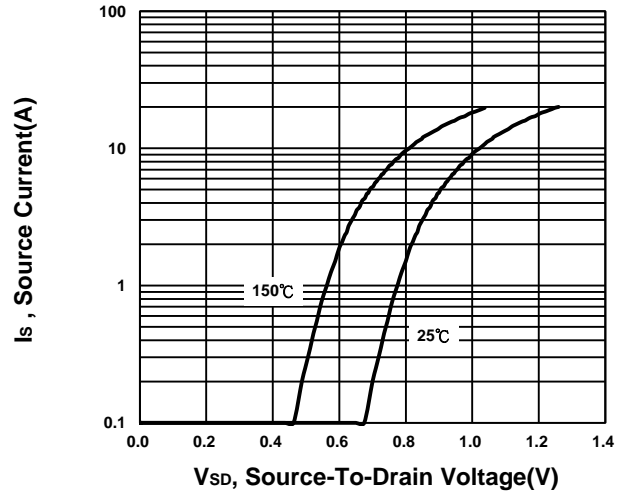
On-Resistance VS Drain-To-Source Current



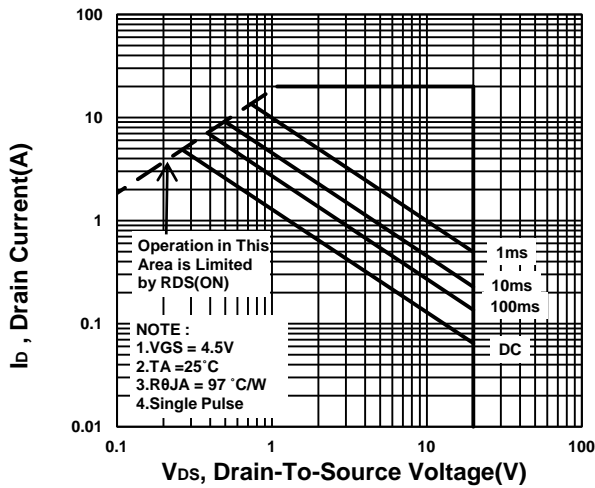
On-Resistance VS Temperature



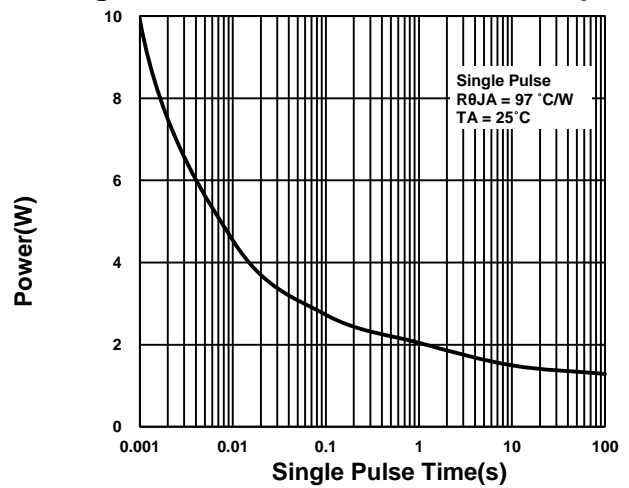
Source-Drain Diode Forward Voltage



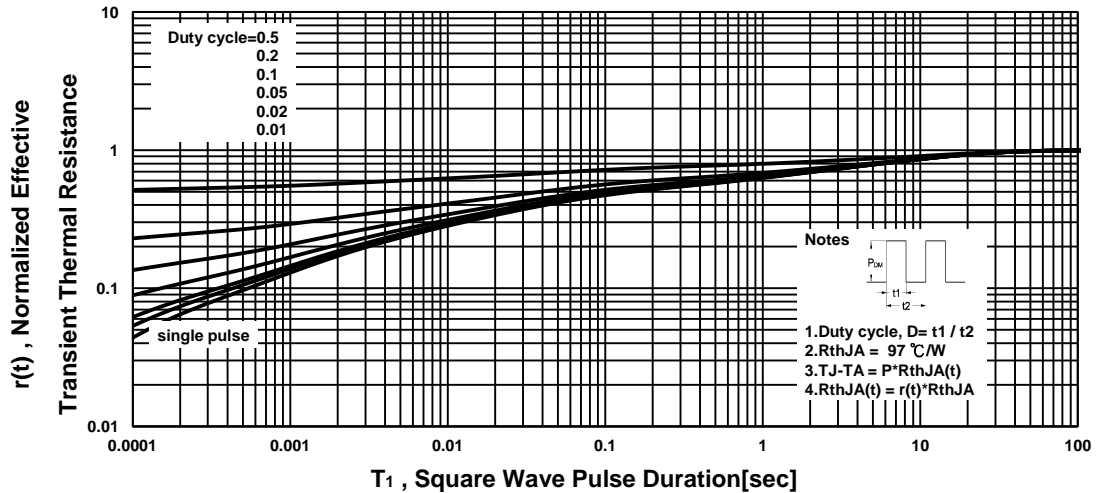
Safe Operating Area



Single Pulse Maximum Power Dissipation

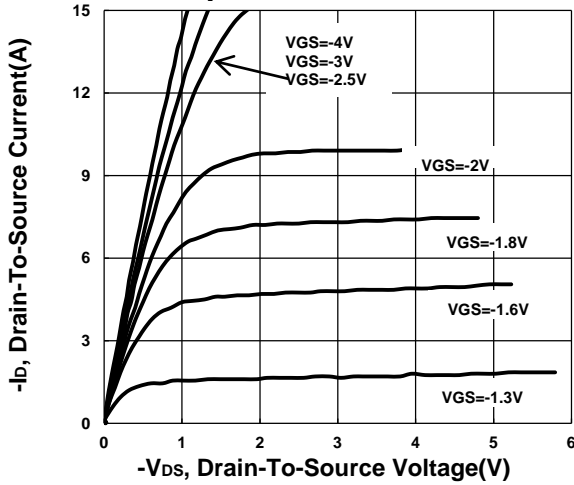


Transient Thermal Response Curve

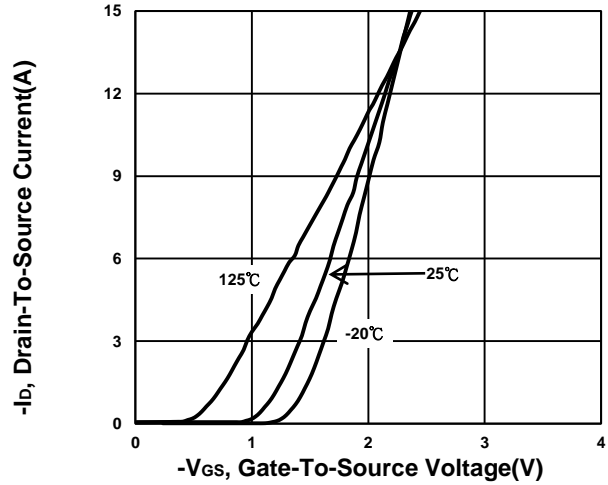


P-CHANNEL

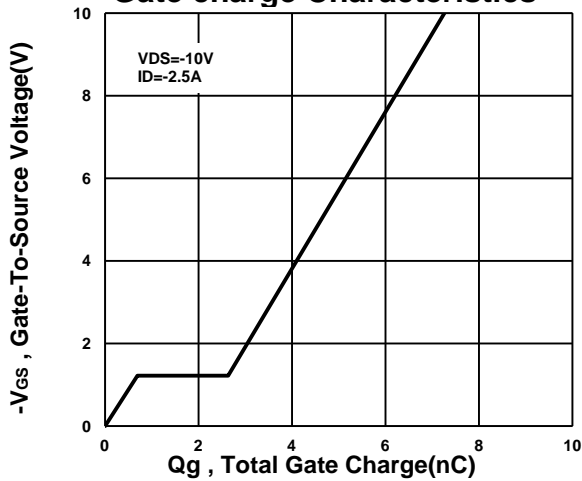
Output Characteristics



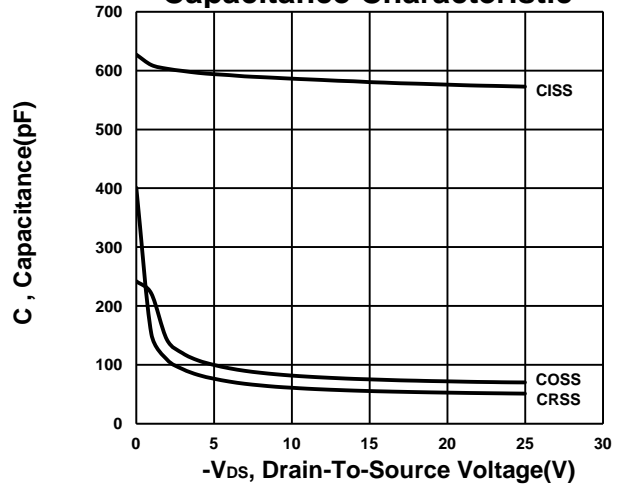
Transfer Characteristics



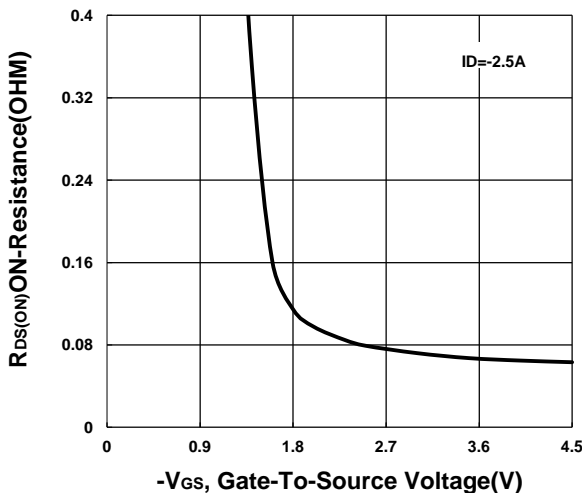
Gate charge Characteristics



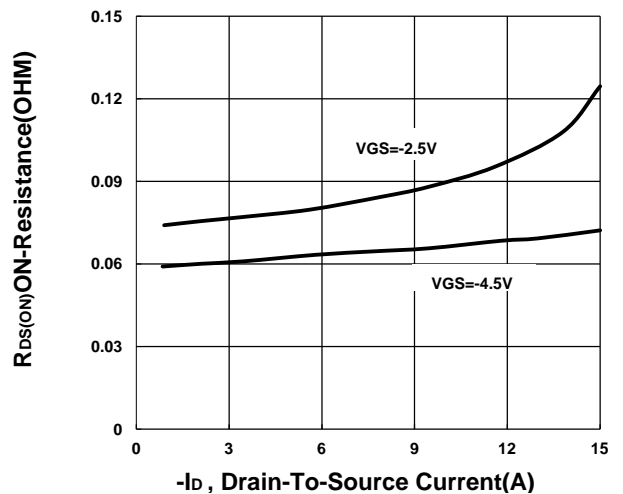
Capacitance Characteristic



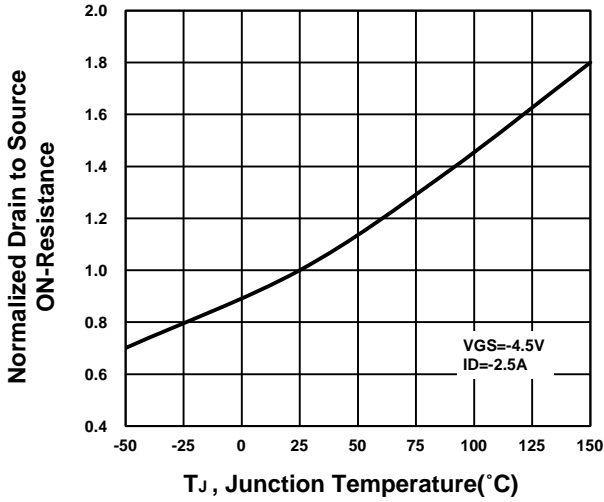
On-Resistance VS Gate-To-Source Voltage



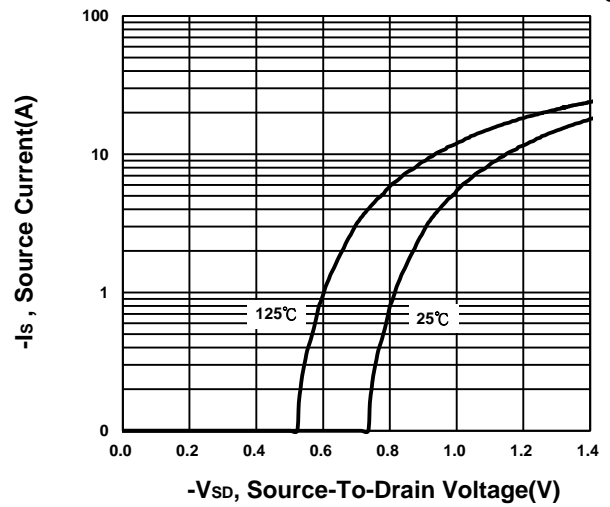
On-Resistance VS Drain-To-Source Current



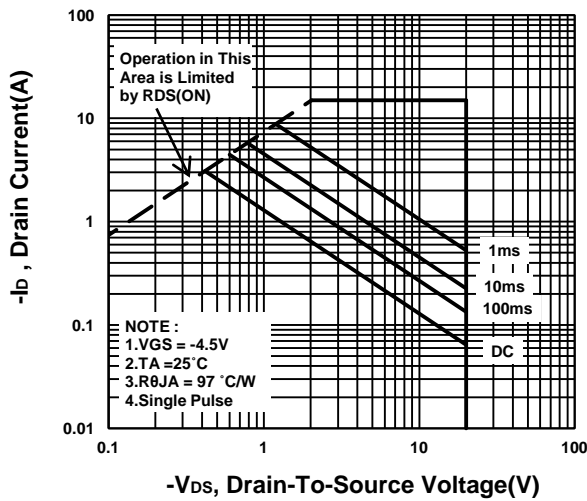
On-Resistance VS Temperature



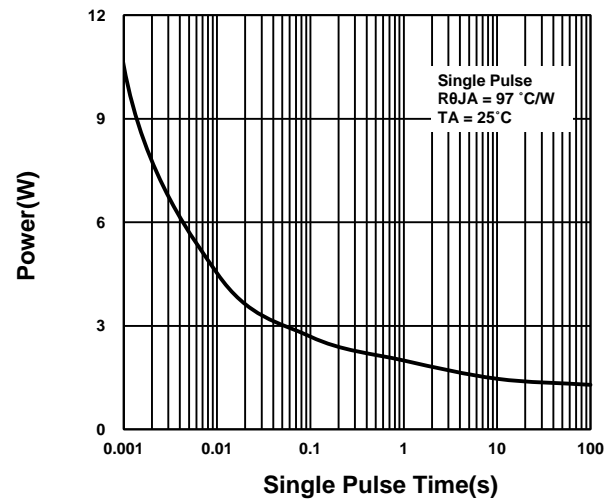
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

