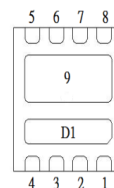
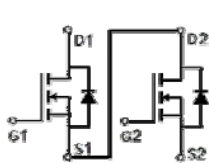


PRODUCT SUMMARY

	V _{(BR)DSS}	R _{DS(ON)}	I _D
Q2	30V	9mΩ	34A
Q1	30V	10.5mΩ	31A



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



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	34	31	A
	T _C = 100 °C		22	20	
Pulsed Drain Current ¹		I _{DM}	48	46	
Continuous Drain Current ³	T _A = 25 °C	I _D	11	9.7	
	T _A = 70 °C		8.8	7.7	
Avalanche Current		I _{AS}	21	18.3	
Avalanche Energy	L = 0.1mH	E _{AS}	22	16.7	mJ
Power Dissipation	T _C = 25 °C	P _D	20	19	W
	T _C = 100 °C		8	7.6	
Power Dissipation	T _A = 25 °C	P _D	2	1.7	W
	T _A = 70 °C		1.2	1.1	
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	R _{θJA}	Q2		62	°C / W
	R _{θJA}	Q1		70	
Junction-to-Case	R _{θJC}	Q2		6.2	
	R _{θJC}	Q1		6.5	

¹Pulse width limited by maximum junction temperature T_{J(MAX)}=150°C.

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. The value in any given application depends on the user's specific board design.

³Package limitation current is Q2=14A , Q1=9.5A.

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	Q2	30		V
			Q1	30		
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	Q2	1.3	1.75	2.3
			Q1	1.3	1.75	2.3
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V	Q2			±100
			Q1			±100
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V	Q2			1
			Q1			1
		V _{DS} = 20V, V _{GS} = 0V, T _J = 55 °C	Q2			10
			Q1			10
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 4.5V, I _D = 10A	Q2		8	12
		V _{GS} = 4.5V, I _D = 9A	Q1		13	15.5
		V _{GS} = 10V, I _D = 10A	Q2		6.3	9
		V _{GS} = 10V, I _D = 9.5A	Q1		8.6	10.5
Forward Transconductance ¹	g _{fs}	V _{DS} = 5V, I _D = 10A	Q2		43	
		V _{DS} = 5V, I _D = 9.5A	Q1		45	
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz	Q2		782	
			Q1		616	
Output Capacitance	C _{oss}		Q2		139	
			Q1		120	
Reverse Transfer Capacitance	C _{riss}		Q2		76	
			Q1		83	
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	Q2		2.3	3.5
		Q1		2.7	4	
Total Gate Charge ²	Q _g	Q2 V _{DS} = 15V, V _{GS} = 10V, I _D = 10A Q1 V _{DS} = 15V, V _{GS} = 10V, I _D = 9.5A	V _{GS} = 10V	Q2		18
			V _{GS} = 10V	Q1		14
			V _{GS} = 4.5V	Q2		9.6
				Q1		7.6
Gate-Source Charge ²	Q _{gs}		Q2		2.2	
			Q1		2.1	
Gate-Drain Charge ²	Q _{gd}		Q2		5.2	
			Q1		4	

Turn-On Delay Time ²	$t_{d(on)}$	<p style="text-align: center;">Q2 $V_{DS} = 15V,$ $I_D \cong 10A, V_{GS} = 10V, R_{GEN} = 6\Omega$</p> <p style="text-align: center;">Q1 $V_{DS} = 15V,$ $I_D \cong 9.5A, V_{GS} = 10V, R_{GEN} = 6\Omega$</p>	Q2		27		nS
			Q1		18		
Rise Time ²	t_r		Q2		24		
			Q1		24		
Turn-Off Delay Time ²	$t_{d(off)}$		Q2		47		
			Q1		44		
Fall Time ²	t_f	Q2		25			
		Q1		23			
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25\text{ }^\circ\text{C}$)							
Continuous Current ³	I_S		Q2			16	A
			Q1			17	
Forward Voltage ¹	V_{SD}	$I_F = 10A, V_{GS} = 0V$	Q2			1.2	V
		$I_F = 9.5A, V_{GS} = 0V$	Q1			1.1	
Reverse Recovery Time	t_{rr}	<p style="text-align: center;">Q2 $I_F = 10A, di_F/dt = 100A / \mu S$</p> <p style="text-align: center;">Q1 $I_F = 9.5A, di_F/dt = 100A / \mu S$</p>	Q2		10.5		nS
			Q1		9.3		
Reverse Recovery Charge	Q_{rr}		Q2		2.8		nC
			Q1		2.2		

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

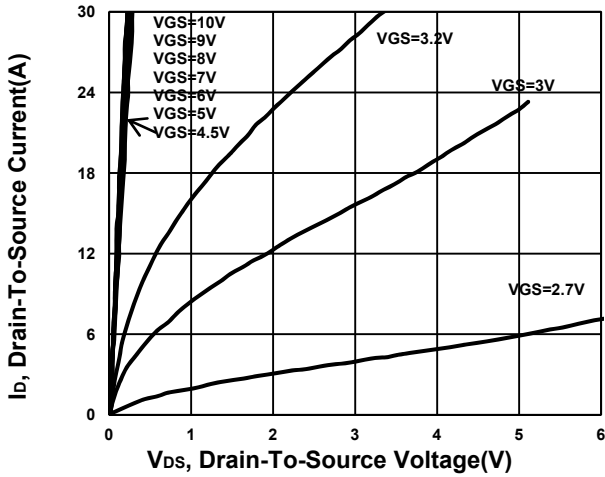
²Independent of operating temperature.

³Package limitation current is Q2=14A , Q1=9.5A.

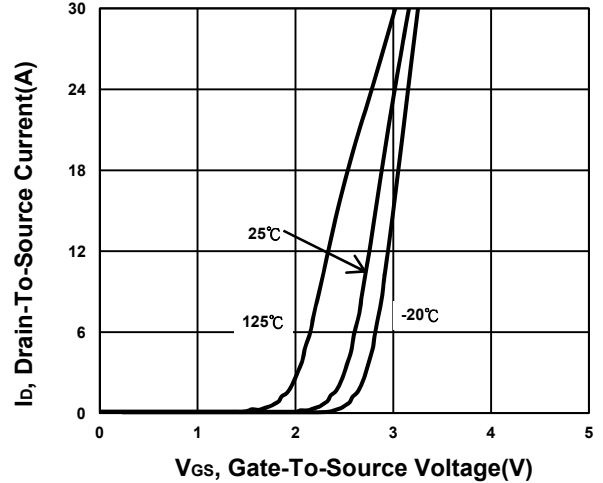
TYPICAL PERFORMANCE CHARACTERISTICS

Q2

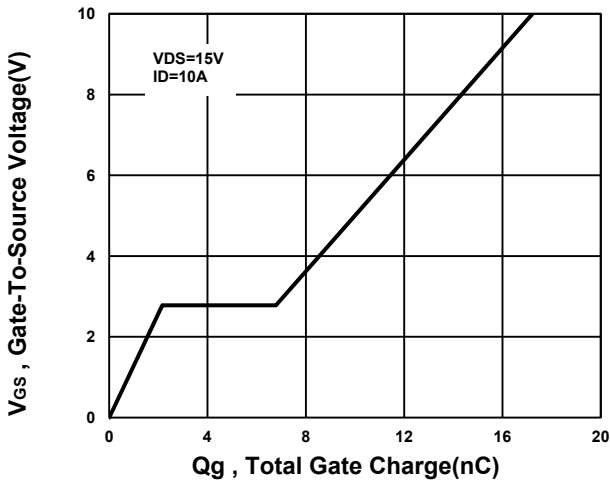
Output Characteristics



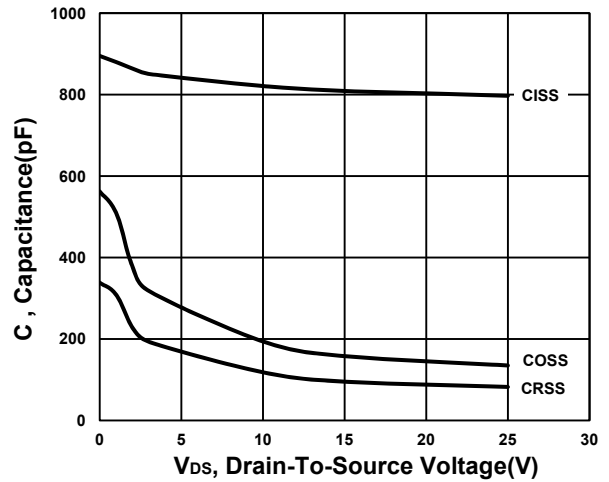
Transfer Characteristics



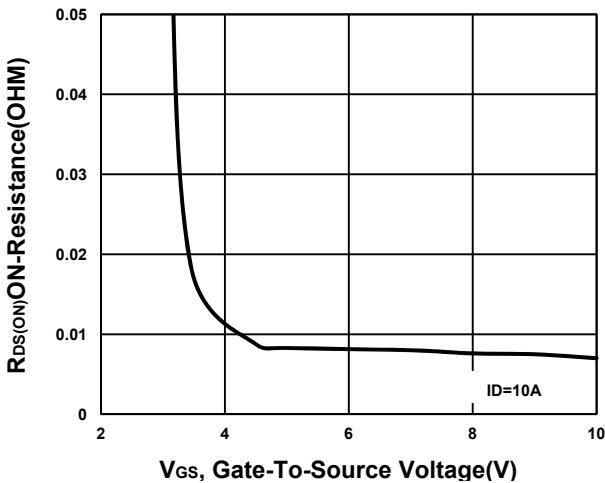
Gate charge Characteristics



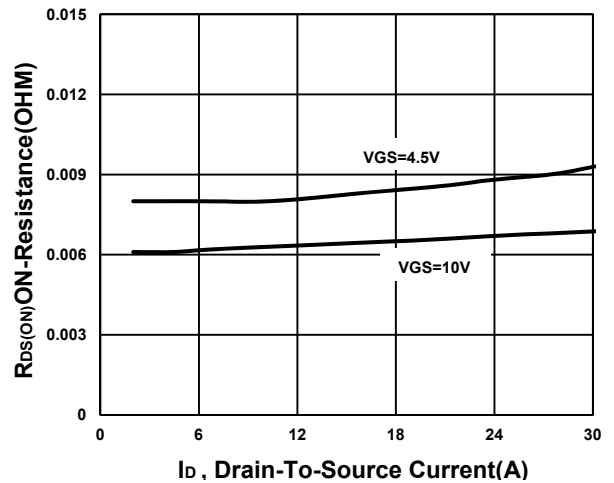
Capacitance Characteristic



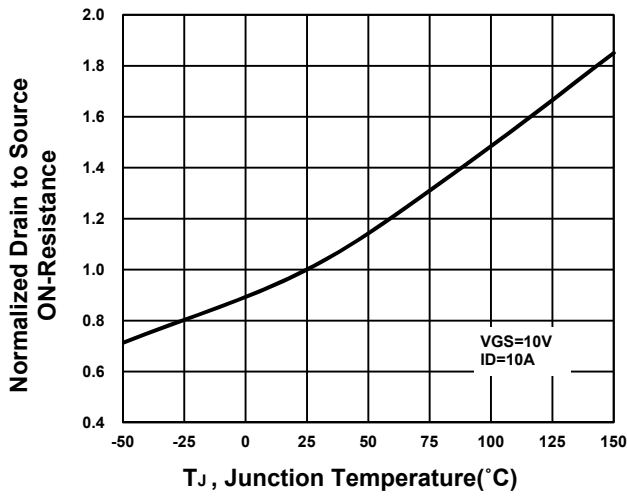
On-Resistance VS Gate-To-Source



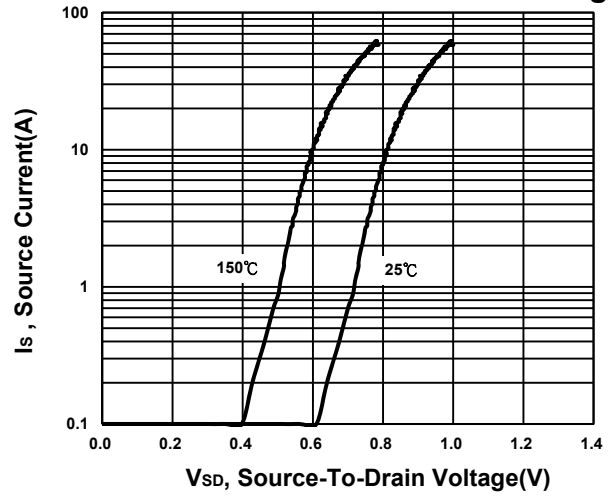
On-Resistance VS Drain Current



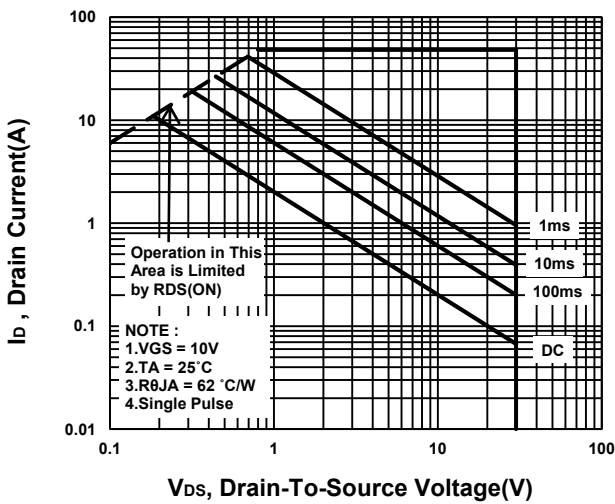
On-Resistance VS Temperature



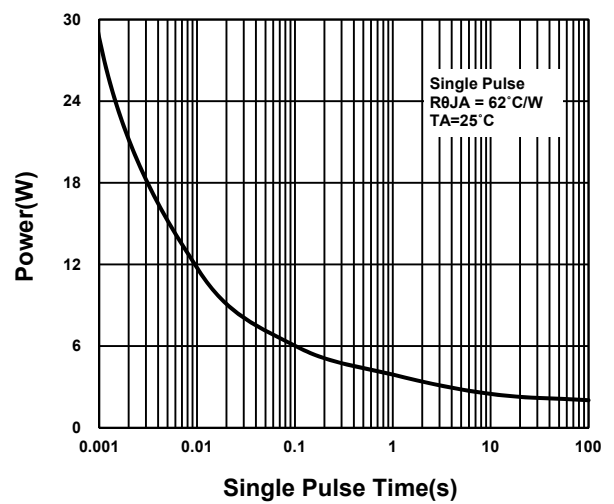
Source-Drain Diode Forward Voltage



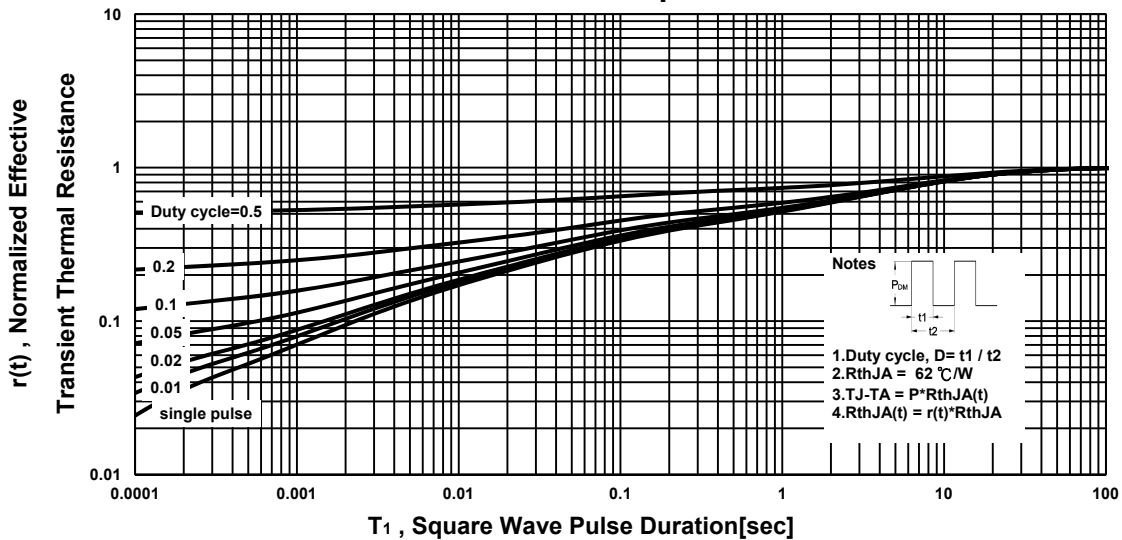
Safe Operating Area



Single Pulse Maximum Power Dissipation

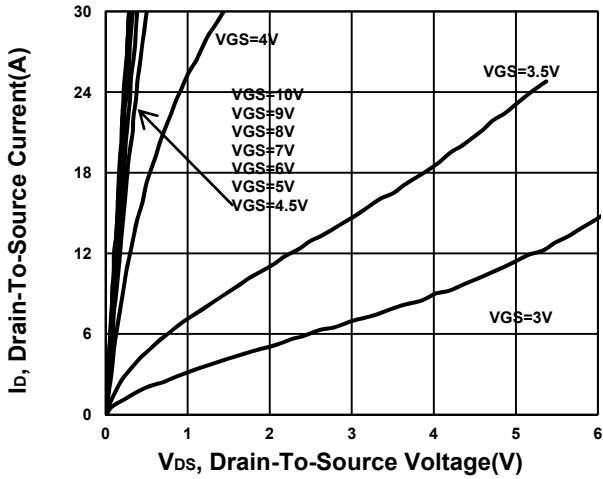


Transient Thermal Response Curve

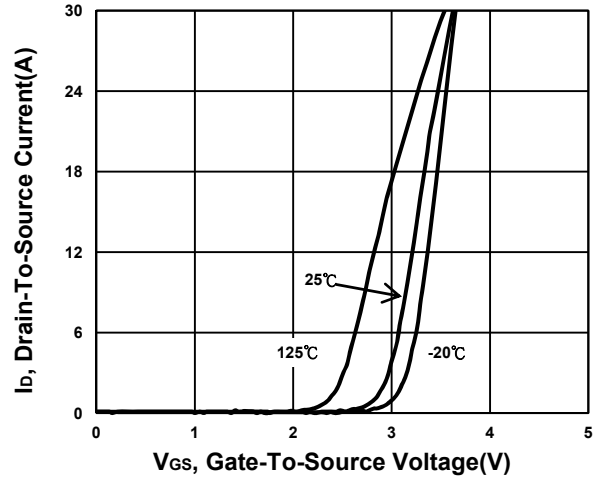


Q1

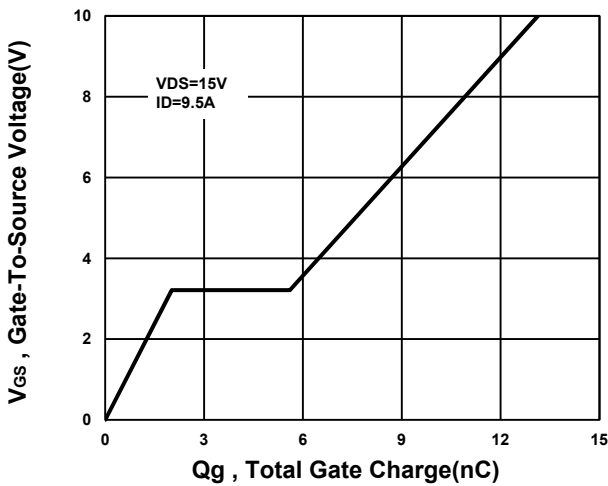
Output Characteristics



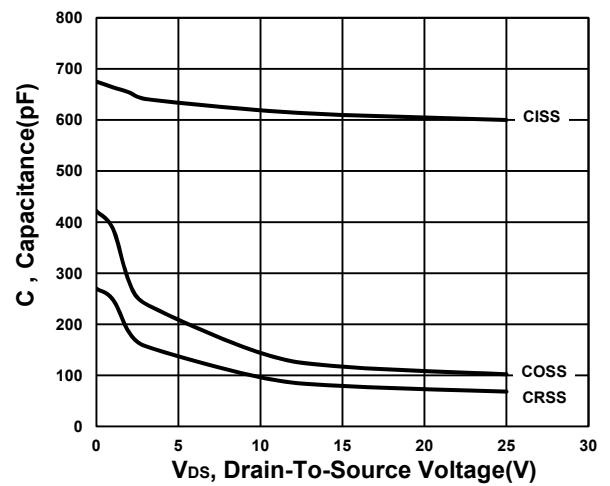
Transfer Characteristics



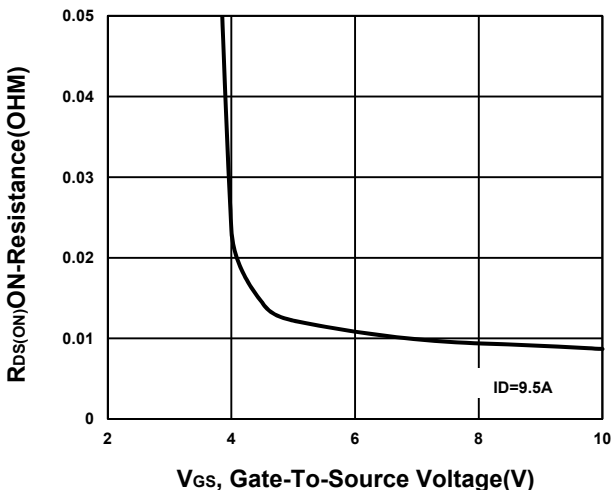
Gate charge Characteristics



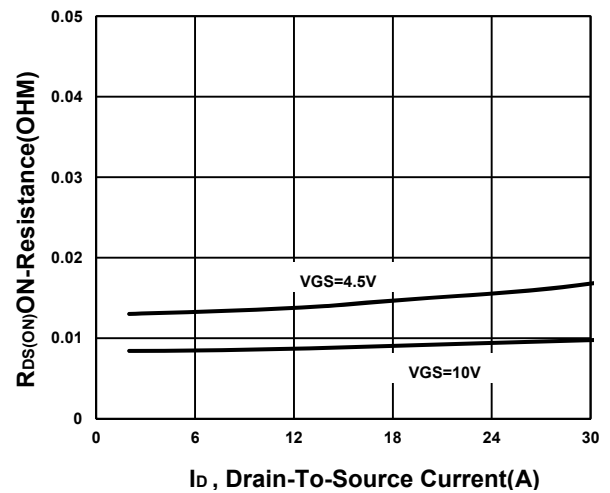
Capacitance Characteristic



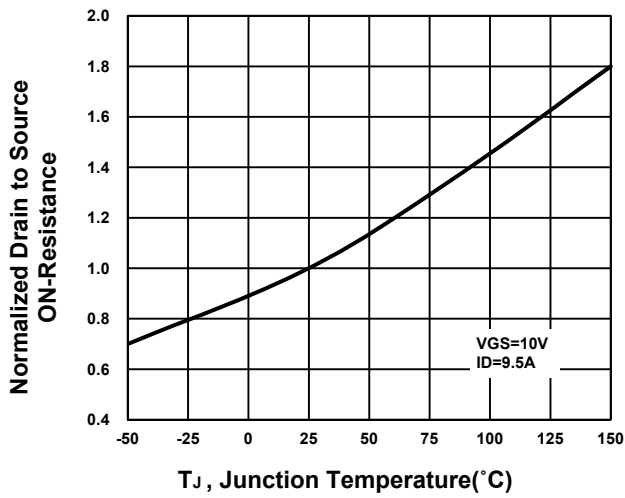
On-Resistance VS Gate-To-Source



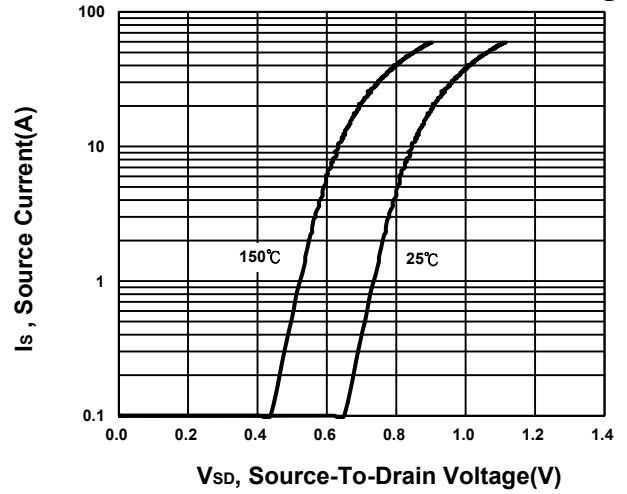
On-Resistance VS Drain Current



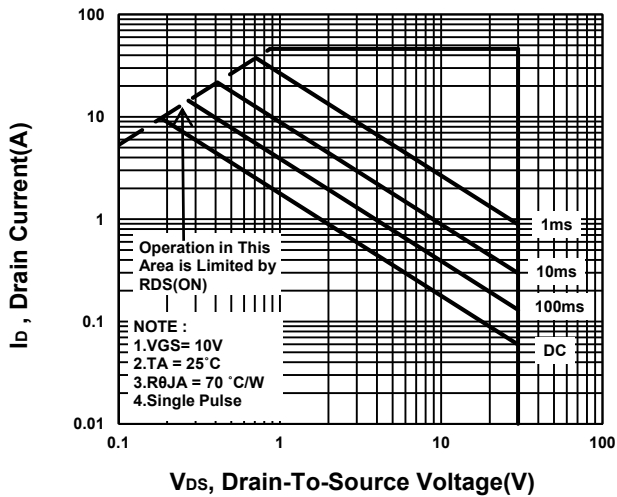
On-Resistance VS Temperature



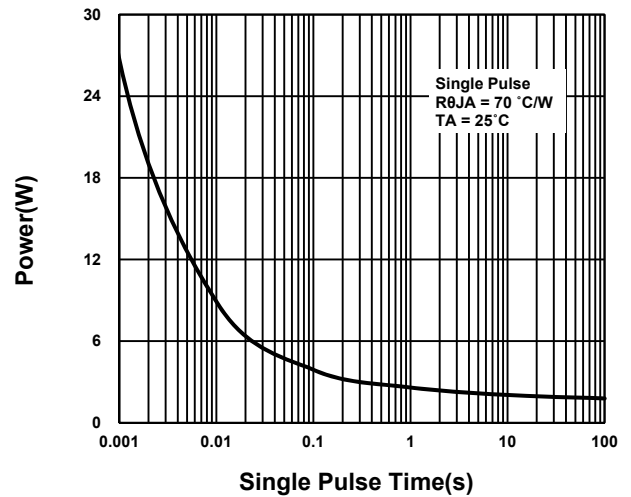
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

