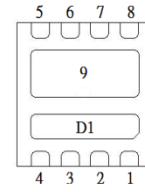
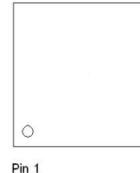
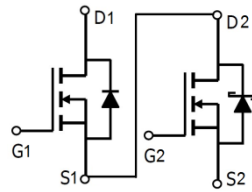




PRODUCT SUMMARY

	V _{(BR)DSS}	R _{DS(ON)}	I _D
Q2	30V	7.5mΩ	39A
Q1	30V	20mΩ	21A



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	39	21	A
	T _C = 100 °C		24	13	
Pulsed Drain Current ¹		I _{DM}	50	32	
Continuous Drain Current	T _A = 25 °C	I _D	14	8	
	T _A = 70 °C		11	6.5	
Avalanche Current		I _{AS}	22	12	
Avalanche Energy	L = 0.1mH	E _{AS}	24	7.2	mJ
Power Dissipation	T _C = 25 °C	P _D	21	16	W
	T _C = 100 °C		8.6	6	
Power Dissipation ⁴	T _A = 25 °C	P _D	2.7	2.5	W
	T _A = 70 °C		1.7	1.6	
Operating Junction & Storage Temperature Range		T _j , T _{stg}	-55 to 150		°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE		SYMBOL	Q2 Max	Q1 Max	UNITS
Junction-to-Ambient ²	t ≤ 10s	R _{θJA}	45	50	°C / W
	Steady-State		55	77	
Junction-to-Case	Steady-State	R _{θJC}	5.8	7.5	

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=19A , Q1=5.5A.

⁴The Power dissipation is based on R_{θJA} t ≤ 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 = 10mA	Q2	30		V		
		V _{GS} = 0V, I _D = 250μA	Q1	30				
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	Q2	1.3	1.7	2.3	V	
			Q1	1.3	1.7	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 = 10A	Q2		7	10.5	mΩ	
		V _{GS} = 4.5V, I _D = 6A	Q1		22	31		
		V _{GS} = 10V, I _D = 10A	Q2		5.3	7.5		
		V _{GS} = 10V, I _D = 8A	Q1		15.5	20		
Forward Transconductance ¹	g _{fs}	V _{DS} = 5V, I _D = 10A	Q2		52		S	
		V _{DS} = 5V, I _D = 8A	Q1		28			
DYNAMIC								
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz	Q2		1075		pF	
			Q1		323			
Output Capacitance	C _{oss}		Q2		215		pF	
			Q1		71			
Reverse Transfer Capacitance	C _{rss}		Q2		155		pF	
			Q1		47			
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 = 8A	V _{GS} = 10V	Q2		20	nC
				V _{GS} = 10V	Q1		7.7	
				V _{GS} = 4.5V	Q2		11	
					Q1		4.2	
Gate-Source Charge ²	Q _{gs}	Q2			2.4			
		Q1			1.3			
Gate-Drain Charge ²	Q _{gd}	Q2			5.8			
		Q1			2.2			

Turn-On Delay Time ²	$t_{d(on)}$	Q2 $V_{DS} = 15V$, $I_D \cong 10A, V_{GS} = 10V, R_{GEN} = 6\Omega$	Q2		27	nS
			Q1		17	
Rise Time ²	t_r	Q2 $V_{DS} = 15V$, $I_D \cong 10A, V_{GS} = 10V, R_{GEN} = 6\Omega$	Q2		25	nS
			Q1		17	
Turn-Off Delay Time ²	$t_{d(off)}$	Q1 $V_{DS} = 15V$, $I_D \cong 8A, V_{GS} = 10V, R_{GEN} = 6\Omega$	Q2		51	nS
			Q1		37	
Fall Time ²	t_f	Q2 $V_{DS} = 15V$, $I_D \cong 8A, V_{GS} = 10V, R_{GEN} = 6\Omega$	Q2		27	nS
			Q1		18	
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25^\circ C$)						
Continuous Current ³	I_S		Q2		35	A
			Q1		11	
Forward Voltage ¹	V_{SD}	$I_F = 1A, V_{GS} = 0V$	Q2		0.6	V
			Q1		1.4	
Reverse Recovery Time	t_{rr}	Q2 $I_F = 10A, di_F/dt = 100A / \mu S$	Q2		12	nS
			Q1		8.4	
Reverse Recovery Charge	Q_{rr}	Q1 $I_F = 8A, di_F/dt = 100A / \mu S$	Q2		3.5	nC
			Q1		1.5	

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

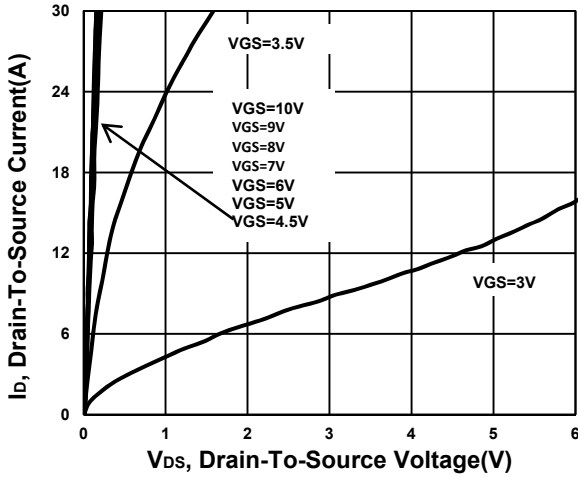
²Independent of operating temperature.

³Package limitation current is Q2=19A , Q1=5.5A.

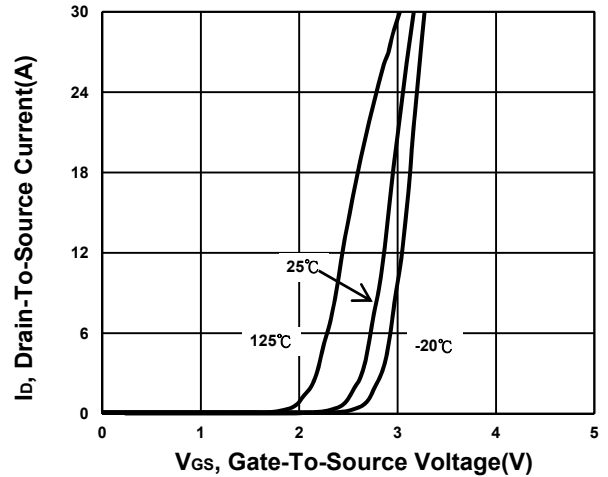
TYPICAL PERFORMANCE CHARACTERISTICS

Q2

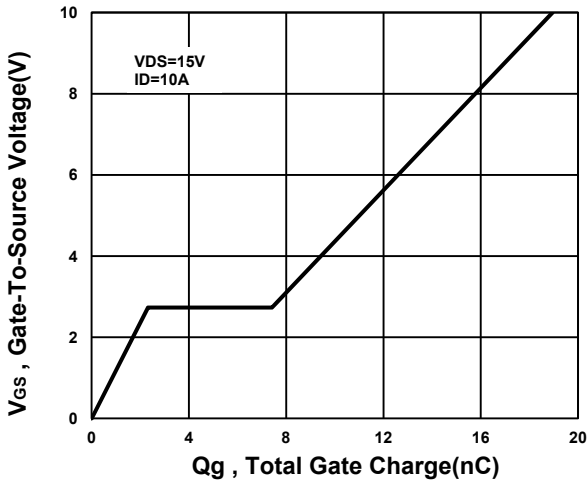
Output Characteristics



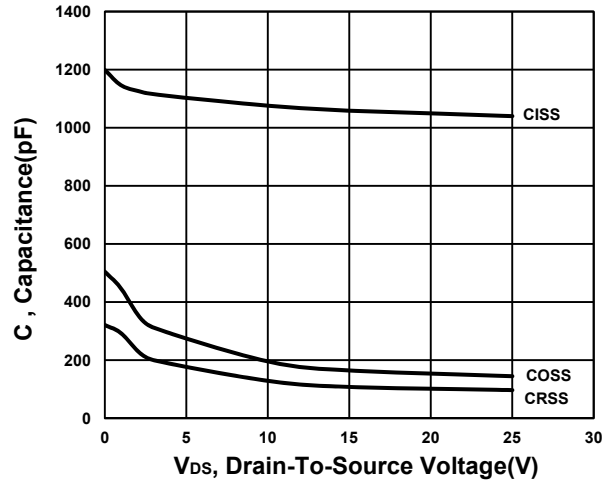
Transfer Characteristics



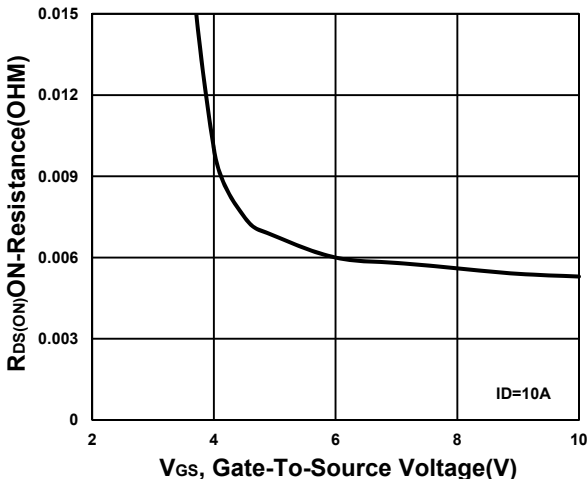
Gate charge Characteristics



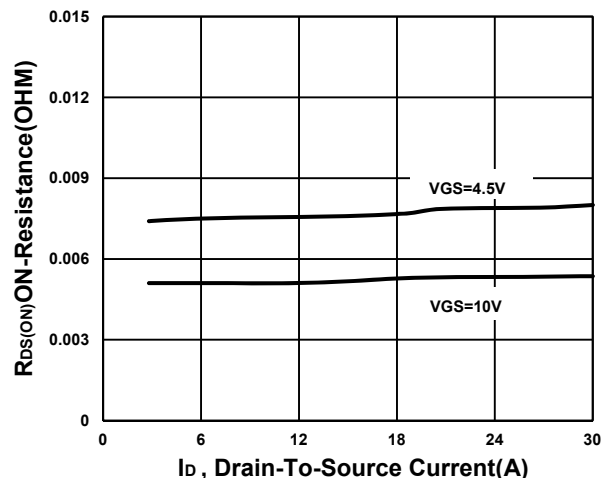
Capacitance Characteristic



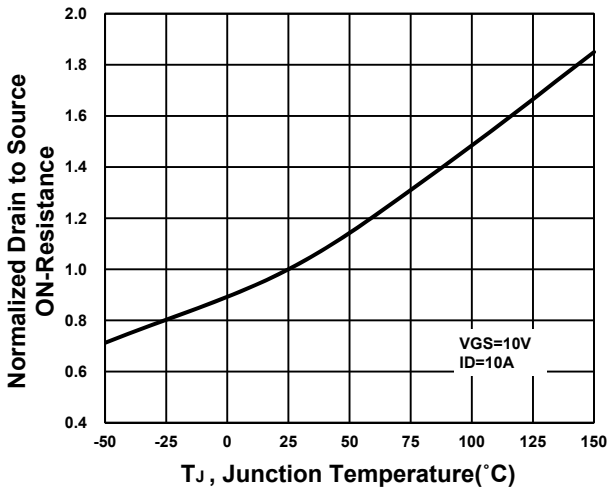
On-Resistance VS Gate-To-Source



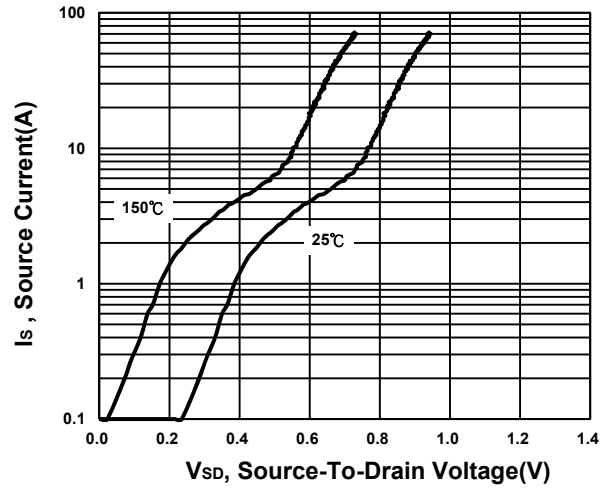
On-Resistance VS Drain Current



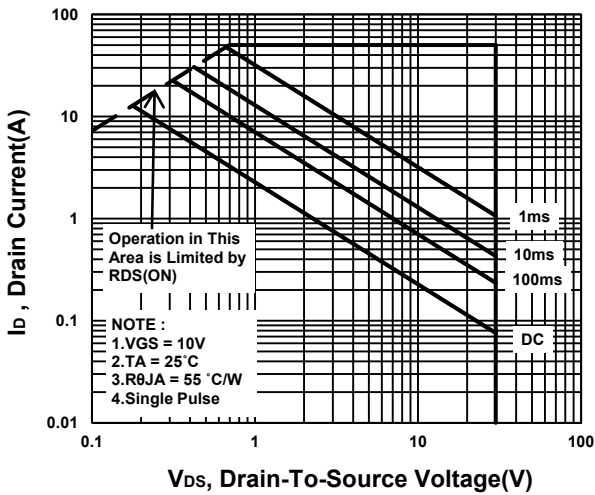
On-Resistance VS Temperature



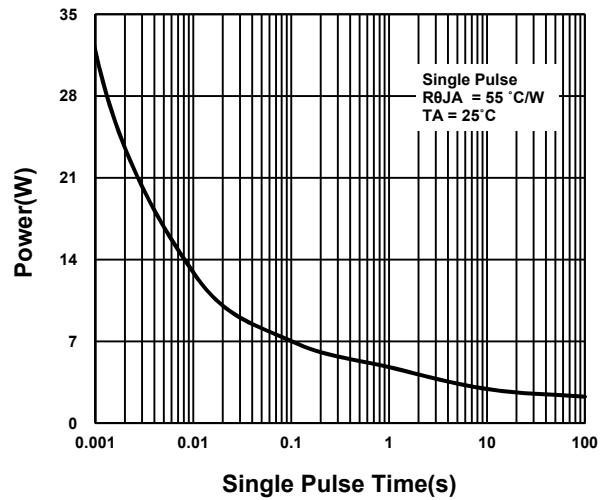
Source-Drain Diode Forward Voltage



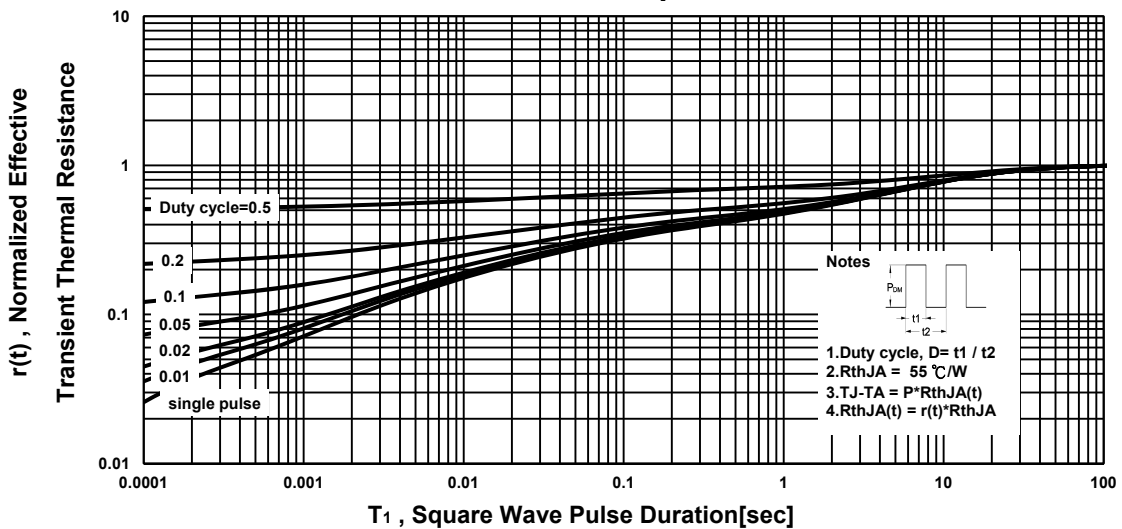
Safe Operating Area



Single Pulse Maximum Power Dissipation

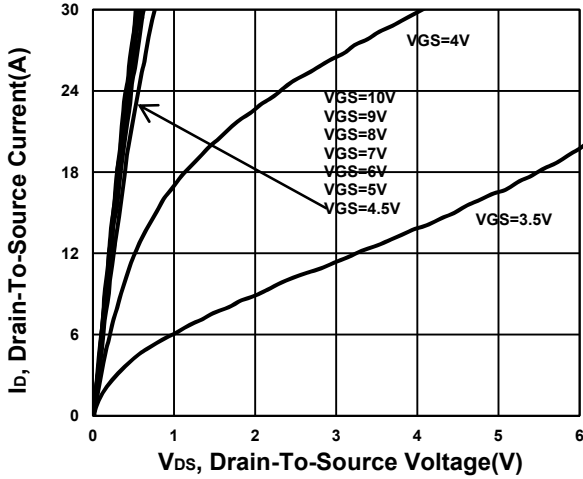


Transient Thermal Response Curve

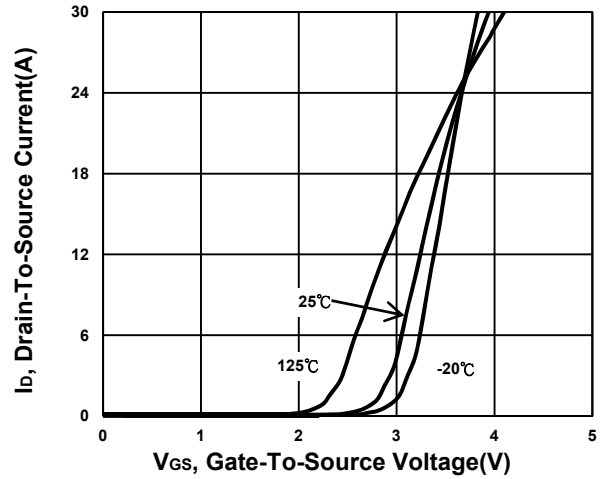


Q1

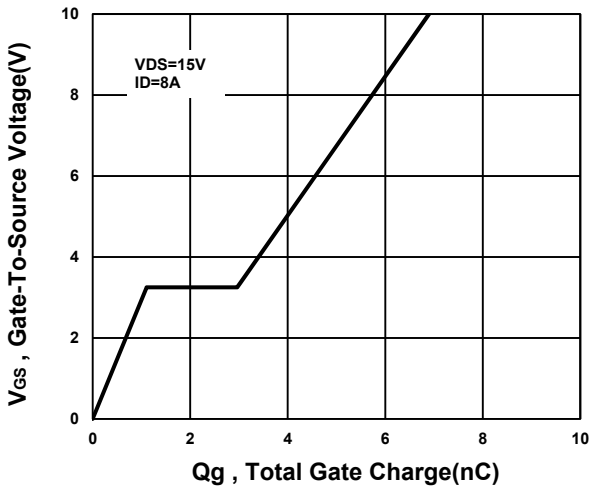
Output Characteristics



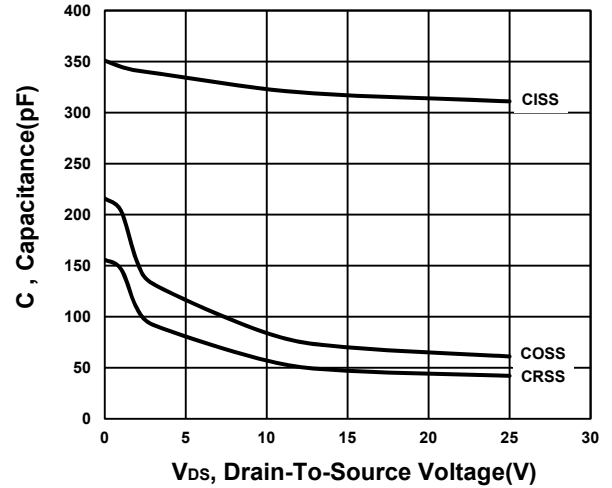
Transfer Characteristics



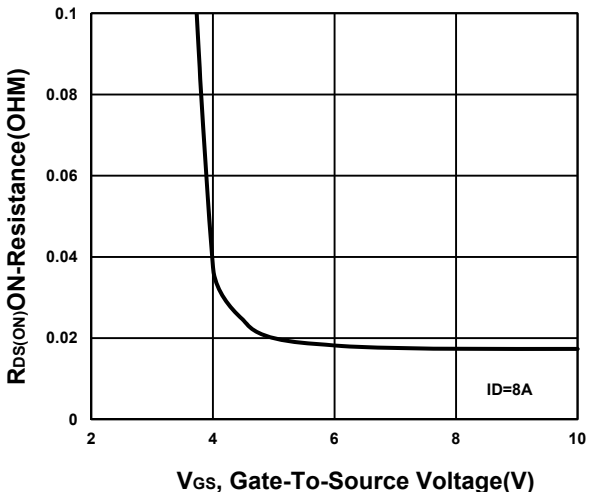
Gate charge Characteristics



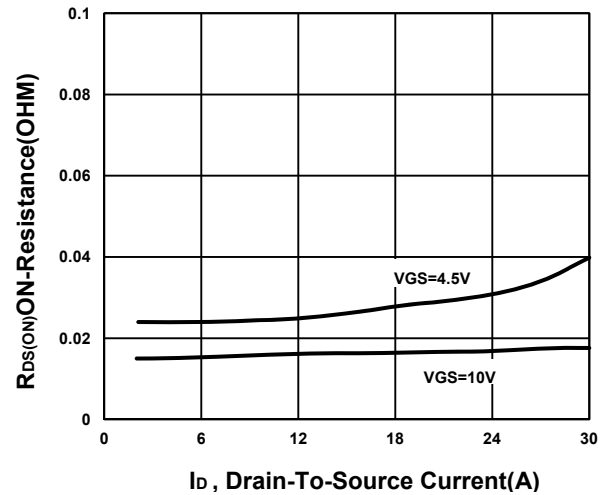
Capacitance Characteristic



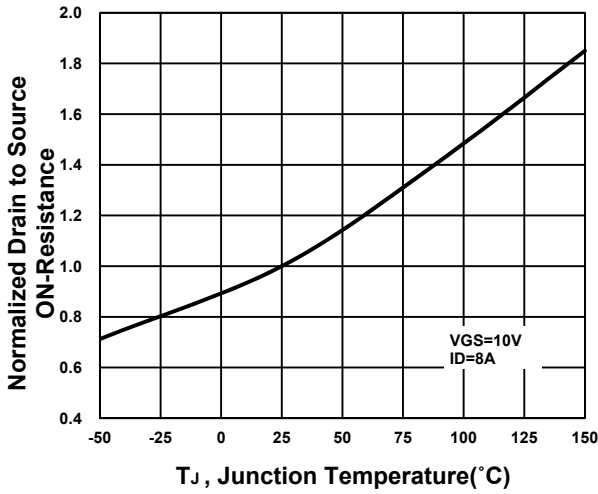
On-Resistance VS Gate-To-Source



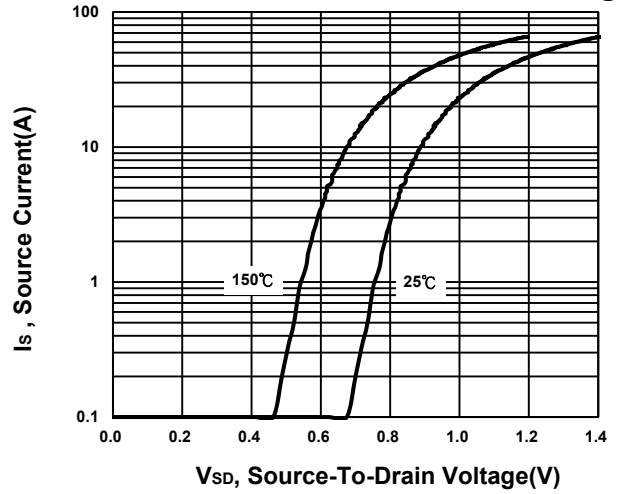
On-Resistance VS Drain Current



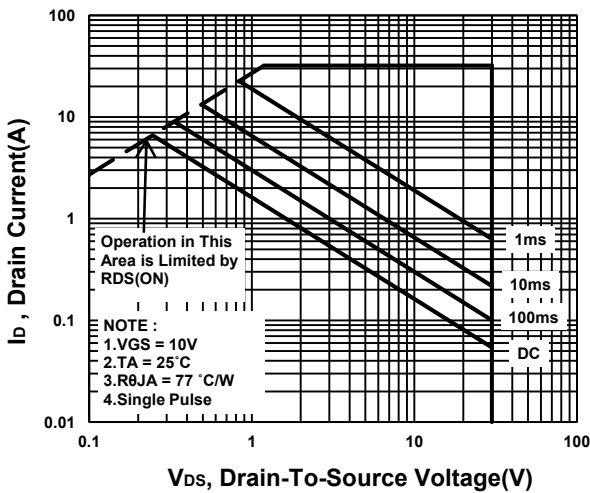
On-Resistance VS Temperature



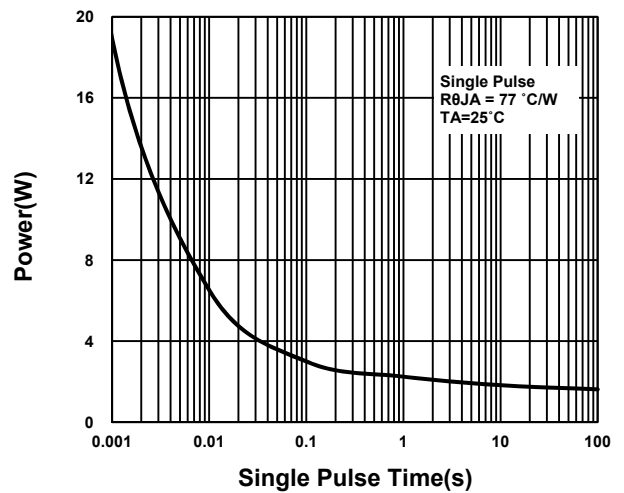
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

