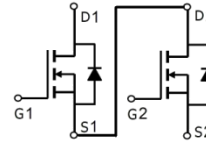




PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
Q2	30V	2.8mΩ	83A
Q1	30V	11mΩ	36A

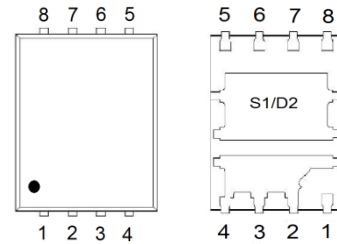


Features

- 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
- Computer for DC to DC Converters Applications.



1 : G1
2,3,4 : D1
5,6,7 : S2
8 : G2

ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ °C}$ 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	$T_C = 25\text{ °C}$	I_D	83	36	A
	$T_C = 100\text{ °C}$		52	23	
Pulsed Drain Current ¹		I_{DM}	130	55	
Continuous Drain Current	$T_A = 25\text{ °C}$	I_D	21	10	
	$T_A = 70\text{ °C}$		17	8	
Avalanche Current		I_{AS}	52	21	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	135	22	mJ
Power Dissipation	$T_C = 25\text{ °C}$	P_D	36	28	W
	$T_C = 100\text{ °C}$		14	11	
Power Dissipation	$T_A = 25\text{ °C}$	P_D	2.4	2	W
	$T_A = 70\text{ °C}$		1.5	1.3	
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		51	°C / W
	R _{θJA}	Q1		60	
Junction-to-Case	R _{θJC}	Q2		3.4	
	R _{θJC}	Q1		4.4	

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 :Q1=29A,Q2=42A.

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	V
			Q1	1.3	1.75	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			1	μA
			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 = 16A	Q2		2.1	3.8	mΩ
		V _{GS} = 4.5V, I _D = 10A	Q1		10	14	
		V _{GS} = 10V, I _D = 20A	Q2		1.6	2.8	
		V _{GS} = 10V, I _D = 10A	Q1		6.8	11	
Forward Transconductance ¹	g _{fs}	V _{DS} = 5V, I _D = 20A	Q2		55	S	
		V _{DS} = 5V, I _D = 10A	Q1		40		

DYNAMIC										
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$	Q2	3685	pF					
			Q1	531						
Output Capacitance	C_{oss}		Q2	615						
			Q1	147						
Reverse Transfer Capacitance	C_{rss}		Q2	388						
			Q1	67						
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$	Q2	1	Ω					
		Q1	1							
Total Gate Charge ²	Q_g	$V_{DS} = 15V, I_D = 20A$ $V_{DS} = 15V, I_D = 10A$	Q2	72	nC					
			V _{GS} = 10V	Q1				10		
Gate-Source Charge ²	Q_{gs}		V _{GS} = 4.5V	Q2				37		
			Q1	5.6						
Gate-Drain Charge ²	Q_{gd}		Q2	10						
			Q1	1.4						
Turn-On Delay Time ²	$t_{d(on)}$		Q2	32				nS		
			Q1	15						
Rise Time ²	t_r		$V_{DS} = 15V, I_D \cong 20A, V_{GS} = 10V, R_{GEN} = 6\Omega$ $V_{DS} = 15V, I_D \cong 10A, V_{GS} = 10V, R_{GEN} = 6\Omega$	Q2				16		
				Q1				13		
Turn-Off Delay Time ²	$t_{d(off)}$			Q2				72		
				Q1				21		
Fall Time ²	t_f	Q2		10						
		Q1		15						
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)										
Continuous Current ³	I_S		Q2	36	A					
			Q1	23						
Forward Voltage ¹	V_{SD}		Q2	1	V					
			Q1	1.2						
Reverse Recovery Time	t_{rr}	$I_F = 20A, di_F/dt = 100A / \mu S$	Q2	28	nS					
			Q1	8.8						
Reverse Recovery Charge	Q_{rr}	$I_F = 10A, di_F/dt = 100A / \mu S$	Q2	13	nC					
			Q1	1.2						

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

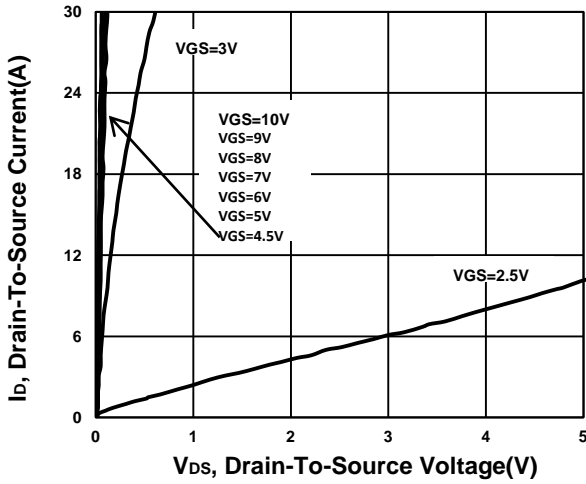
²Independent of operating temperature.

³Package limitation current : Q1=29A, Q2=42A.

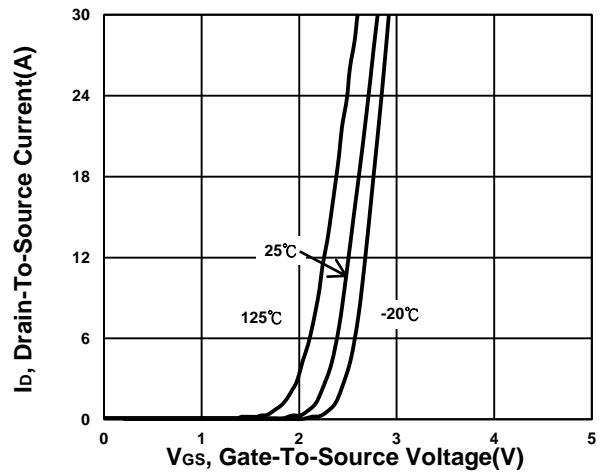
TYPICAL PERFORMANCE CHARACTERISTICS

Q2

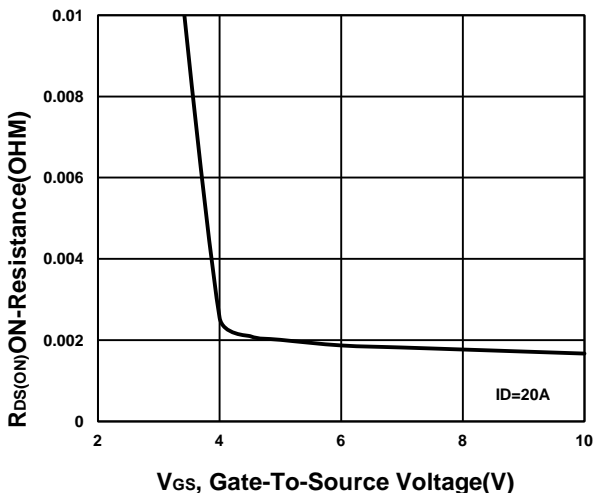
Output Characteristics



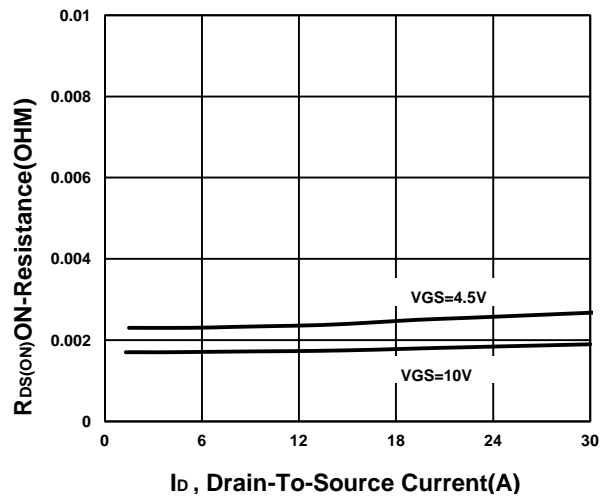
Transfer Characteristics



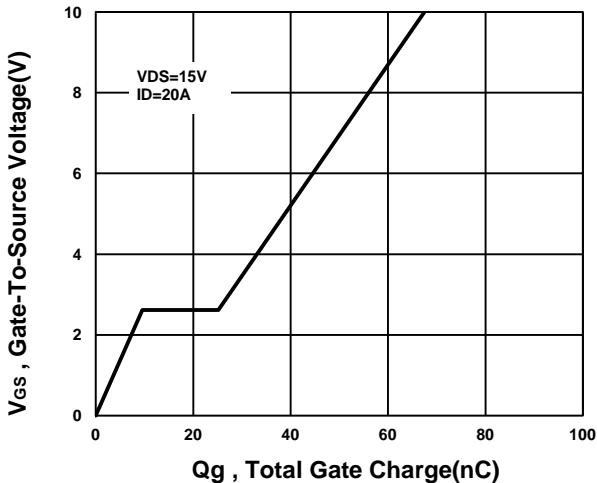
On-Resistance VS Gate-To-Source



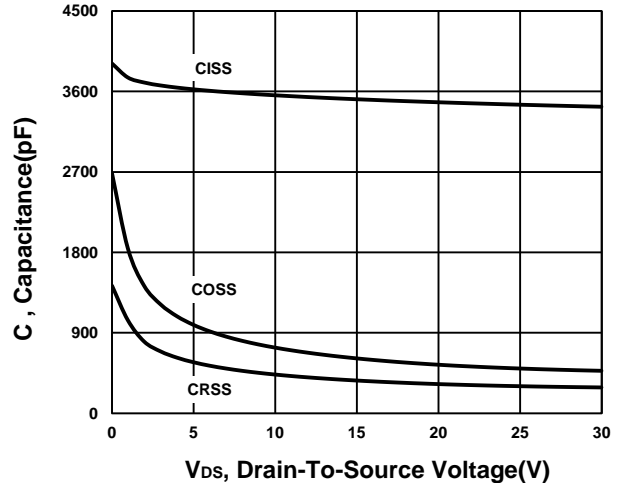
On-Resistance VS Drain Current



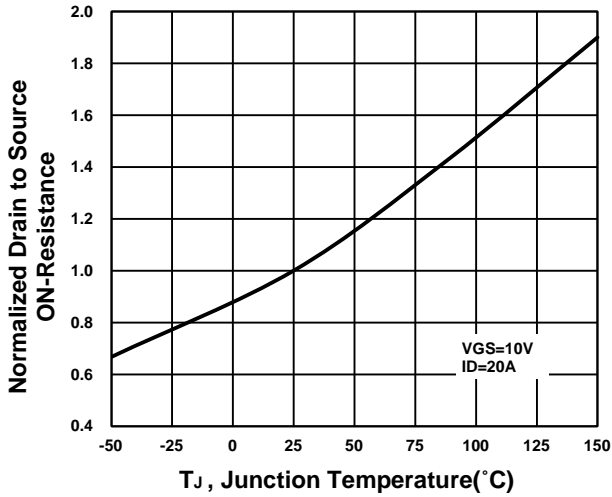
Gate charge Characteristics



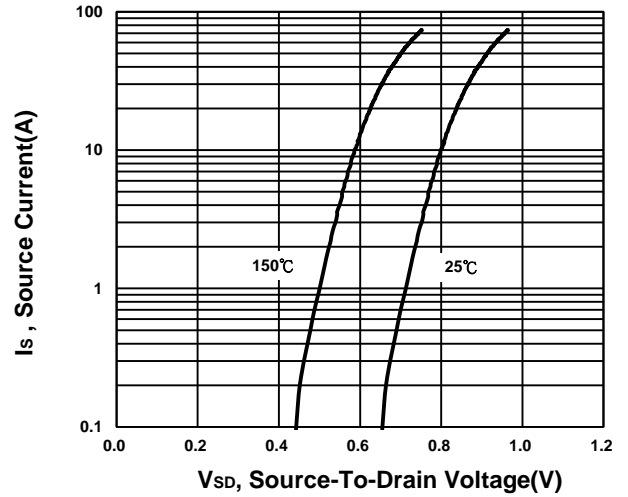
Capacitance Characteristic



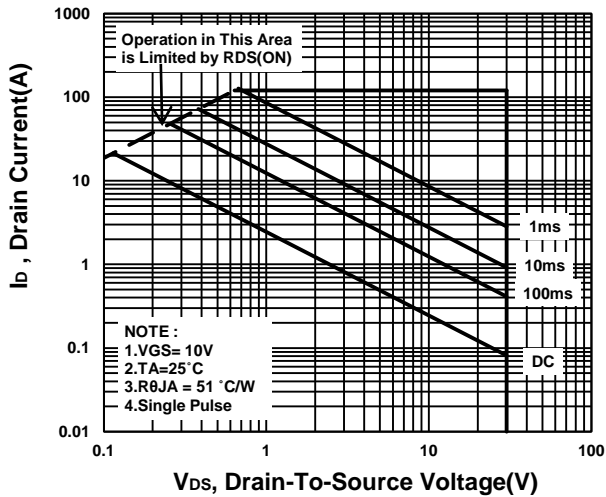
On-Resistance VS Temperature



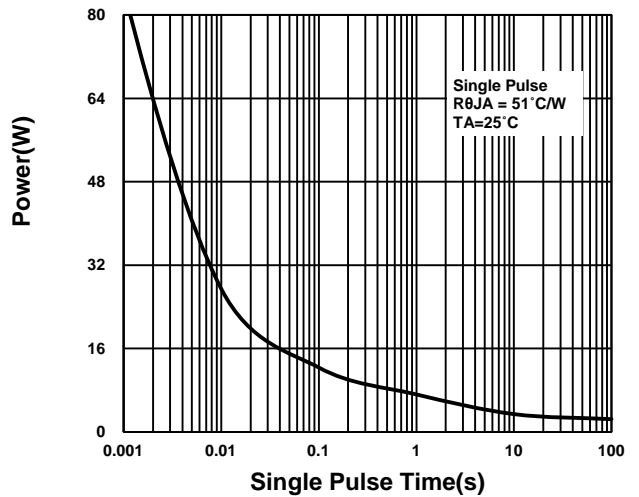
Source-Drain Diode Forward Voltage



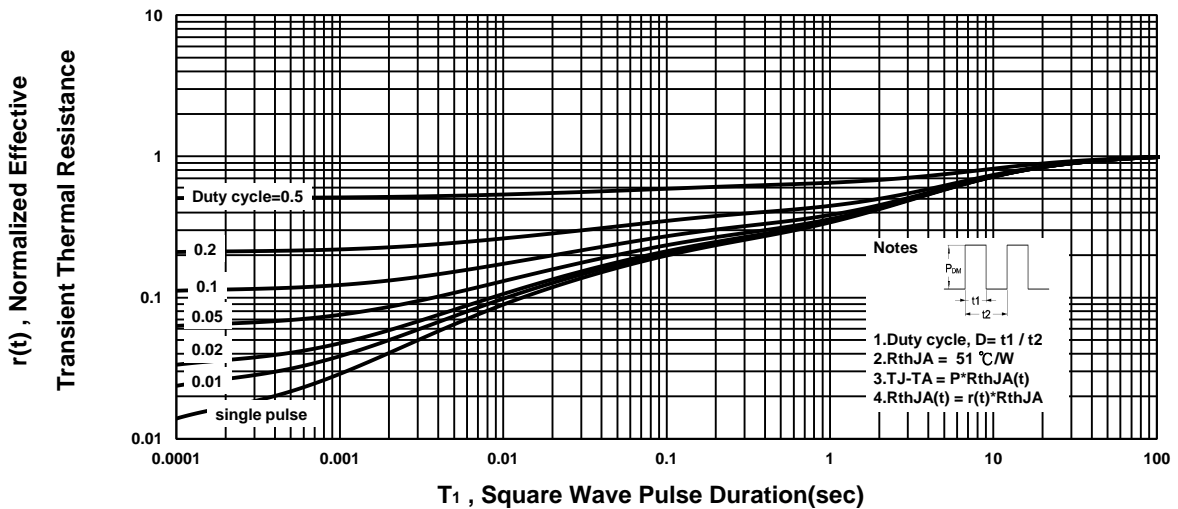
Safe Operating Area



Single Pulse Maximum Power Dissipation

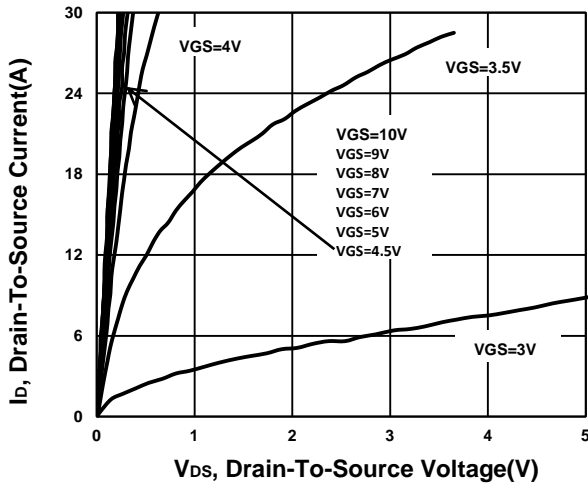


Transient Thermal Response Curve

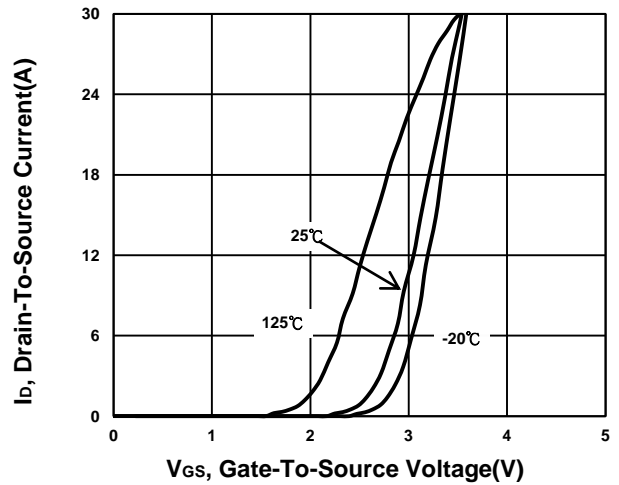


Q1

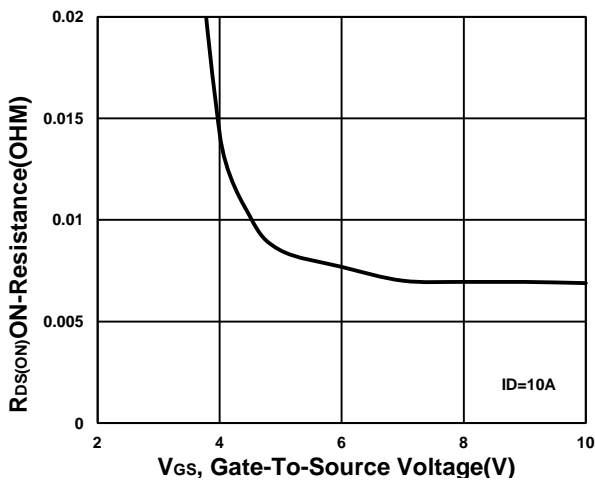
Output Characteristics



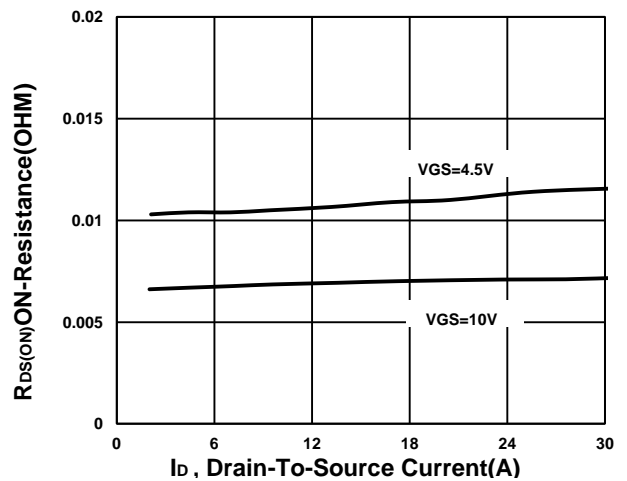
Transfer Characteristics



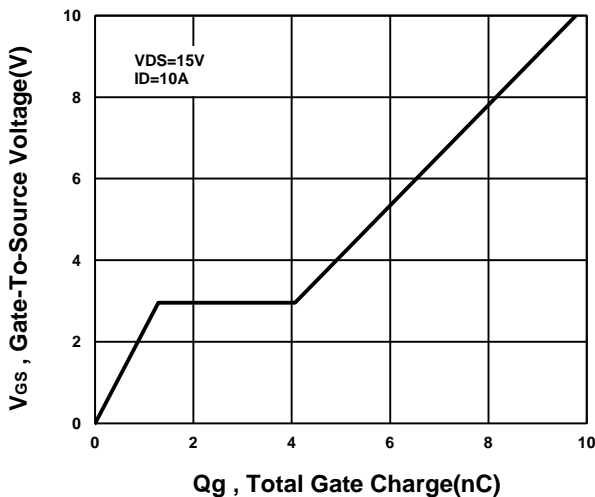
On-Resistance VS Gate-To-Source



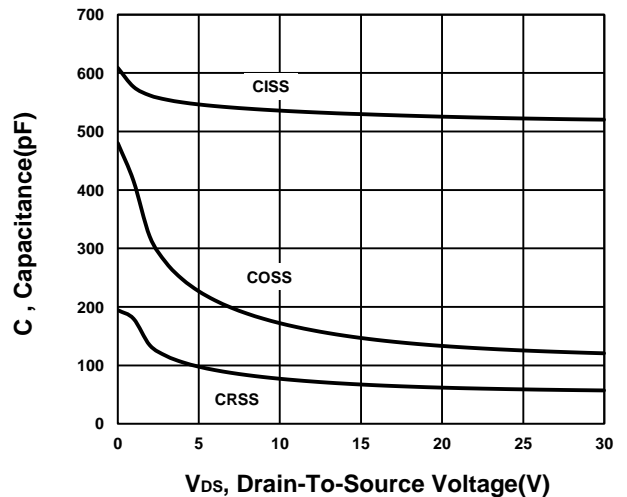
On-Resistance VS Drain Current



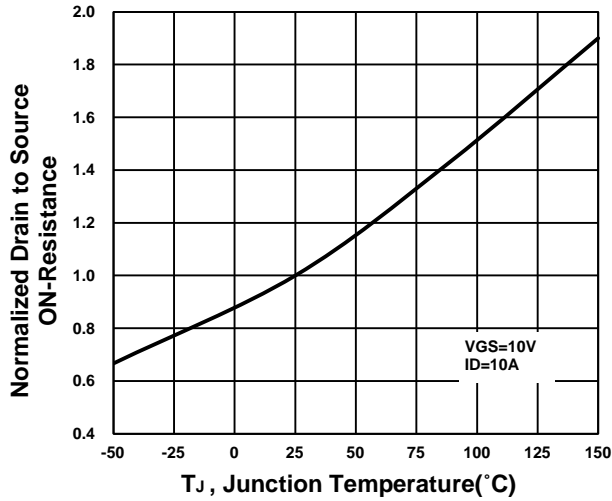
Gate charge Characteristics



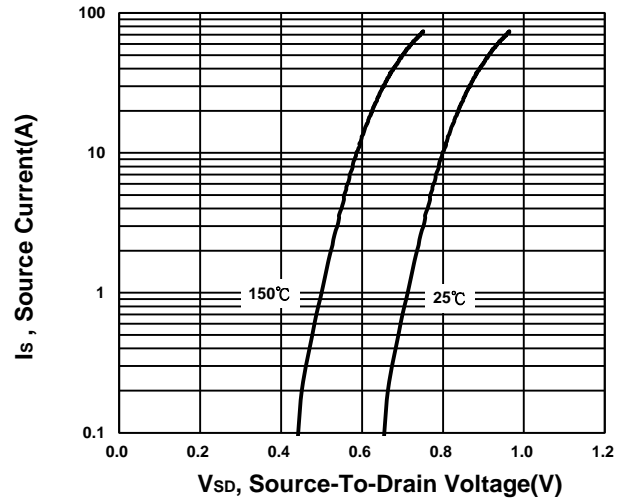
Capacitance Characteristic



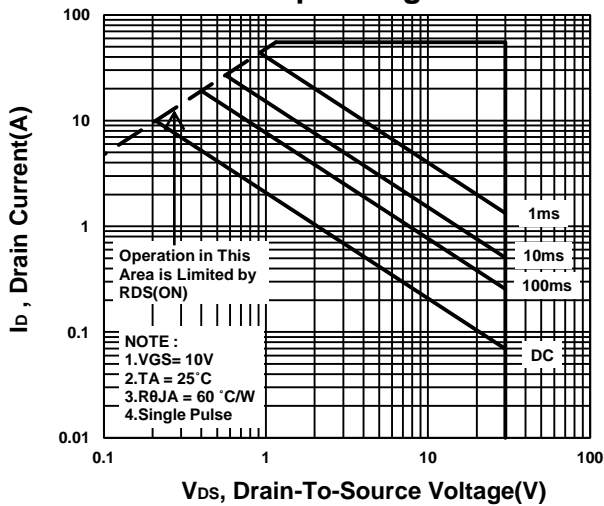
On-Resistance VS Temperature



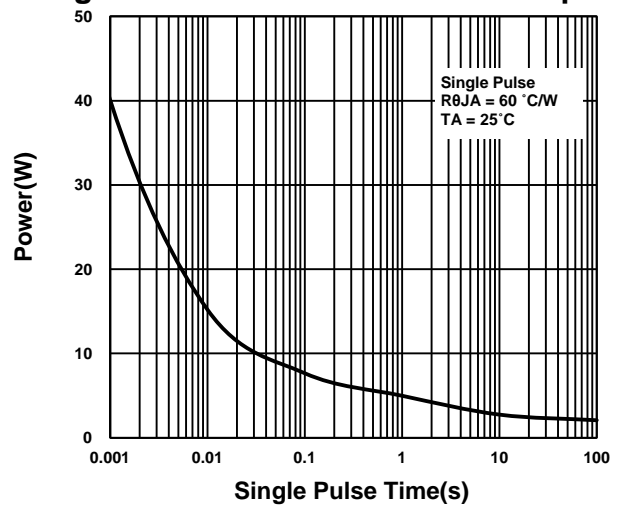
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

