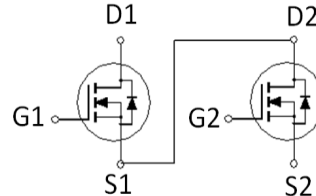




PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
Q2	30V	5.8mΩ	18A
Q1	30V	4.2mΩ	21A

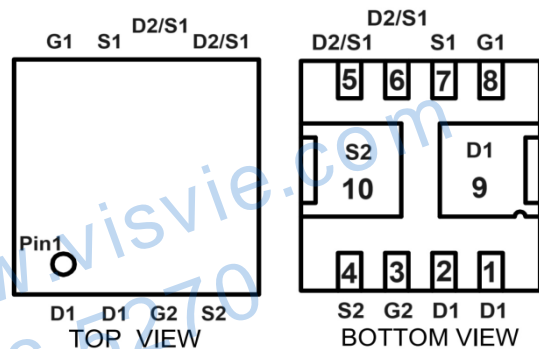


Features

- 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.
- 100% UIS and Rg Tested.

Applications

- Computing DC to DC converters.
- Communications DC to DC converters.
- General Purpose Point of load.



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}	±12	±12	V
Continuous Drain Current	T _C = 25 °C	I_D	50	50	A
	T _C = 100 °C		33	42	
Pulsed Drain Current ¹		I_{DM}	88	110	
Continuous Drain Current ³	T _A = 25 °C	I_D	18	21	
	T _A = 70 °C		14	17	
Avalanche Current		I_{AS}	31	42	
Avalanche Energy	L = 0.03mH	E_{AS}	14	26	mJ
Power Dissipation	T _C = 25 °C	P_D	27	33	W
	T _C = 100 °C		11	13	
Power Dissipation ³	T _A = 25 °C	P_D	3.1	3.4	W
	T _A = 70 °C		2	2.2	
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	$t \leq 10s$	$R_{\theta JA}$	Q2		40	°C / W
			Q1		36	
Junction-to-Ambient ²	Steady-State	$R_{\theta JA}$	Q2		66	
			Q1		63	
Junction-to-Case		$R_{\theta JC}$	Q2		4.5	
			Q1		3.8	

¹Pulse width limited by maximum junction temperature $T_{J(MAX)}=150^{\circ}C$.

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 $T_A =25^{\circ}C$. The value in any given application depends on the user's specific board design.

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

ELECTRICAL CHARACTERISTICS ($T_J = 25^{\circ}C$, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT	
			MIN	TYP	MAX		
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	Q2	30			V
		$V_{GS} = 0V, I_D = 250\mu A$	Q1	30			
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	Q2	1.2	1.6	2.2	V
		$V_{DS} = V_{GS}, I_D = 250\mu A$	Q1	1.2	1.6	2.2	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 12V$	Q2			± 100	nA
		$V_{DS} = 0V, V_{GS} = \pm 12V$	Q1			± 100	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 30V, V_{GS} = 0V$	Q2			1	μA
		$V_{DS} = 30V, V_{GS} = 0V$	Q1			1	
		$V_{DS} = 30V, V_{GS} = 0V, T_J = 55^{\circ}C$	Q2			10	
		$V_{DS} = 30V, V_{GS} = 0V, T_J = 55^{\circ}C$	Q1			10	
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 10V, I_D = 18A$	Q2		4	5.8	m Ω
		$V_{GS} = 10V, I_D = 20A$	Q1		2.9	4.2	
		$V_{GS} = 4.5V, I_D = 18A$	Q2		5.8	7.8	
		$V_{GS} = 4.5V, I_D = 20A$	Q1		4.1	5.7	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 18A$	Q2		60		S
		$V_{DS} = 5V, I_D = 20A$	Q1		85		

DYNAMIC								
Input Capacitance	C_{iss}	Q2 $V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$	Q2		770		pF	
Output Capacitance	C_{oss}		Q1 $V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$	Q1		1216		
Reverse Transfer Capacitance	C_{rss}		Q2		208			
			Q1		294			
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$	Q2		42			Ω
			Q1		47			
Total Gate Charge ²	Q_g	Q2 $V_{DS} = 15V, V_{GS} = 10V,$ $I_D = 18A$	Q2	$V_{GS} = 10V$	14	20	nC	
			Q1	$V_{GS} = 4.5V$	19.7	28		
Gate-Source Charge ²	Q_{gs}	Q1 $V_{DS} = 15V, V_{GS} = 10V,$ $I_D = 20A$	Q2		7.6	11		
			Q1		9.9	14		
Gate-Drain Charge ²	Q_{gd}		Q2		1.8			
			Q1		3.2			
Turn-On Delay Time ²	$t_{d(on)}$	Q2, $V_{DS} = 15V$ $I_D \cong 18A, V_{GS} = 10V,$ $R_{GEN} = 6\Omega$	Q2		7.4		nS	
			Q1		9.2			
Rise Time ²	t_r		Q2		64			
			Q1		70			
Turn-Off Delay Time ²	$t_{d(off)}$	Q1, $V_{DS} = 15V$ $I_D \cong 20A, V_{GS} = 10V,$ $R_{GEN} = 6\Omega$	Q2		20			
			Q1		29			
Fall Time ²	t_f		Q2		73			
			Q1		92			
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25^\circ C$)								
Continuous Current	I_S		Q2			27	A	
			Q1			27		
Forward Voltage ¹	V_{SD}	$I_F = 18A, V_{GS} = 0V$	Q2			1	V	
		$I_F = 20A, V_{GS} = 0V$	Q1			1.2		
Reverse Recovery Time	t_{rr}	Q2 $I_F = 18A, di_F/dt = 400A / \mu S$	Q2		12		nS	
			Q1		14			
Reverse Recovery Charge	Q_{rr}	Q1 $I_F = 20A, di_F/dt = 400A / \mu S$	Q2		10		nC	
			Q1		17			

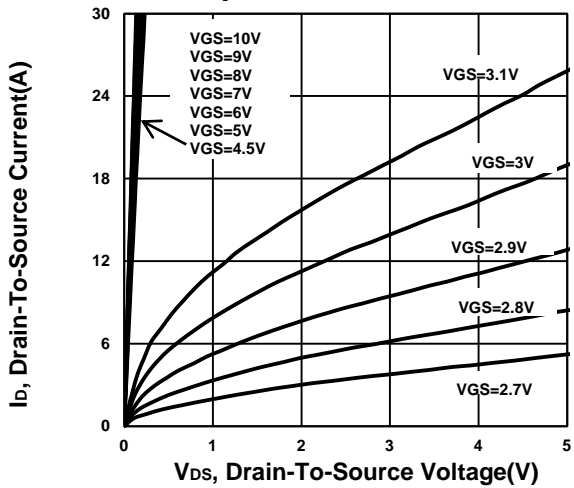
¹Pulse test : Pulse Width $\leq 300 \mu sec$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

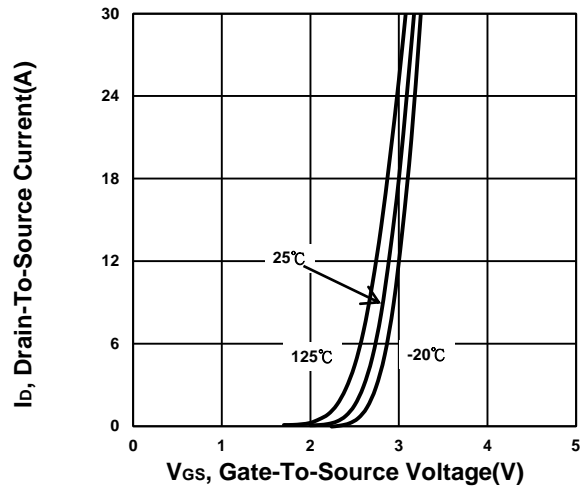
TYPICAL PERFORMANCE CHARACTERISTICS

Q2

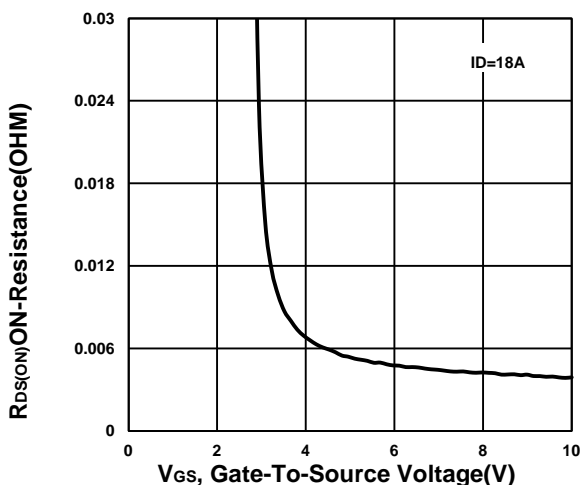
Output Characteristics



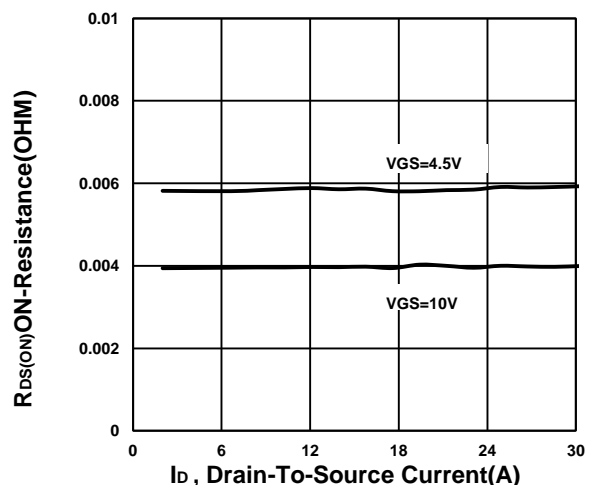
Transfer Characteristics



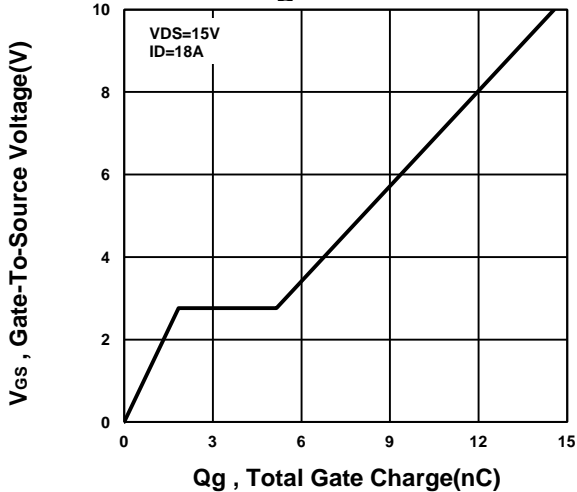
On-Resistance VS Gate-To-Source Voltage



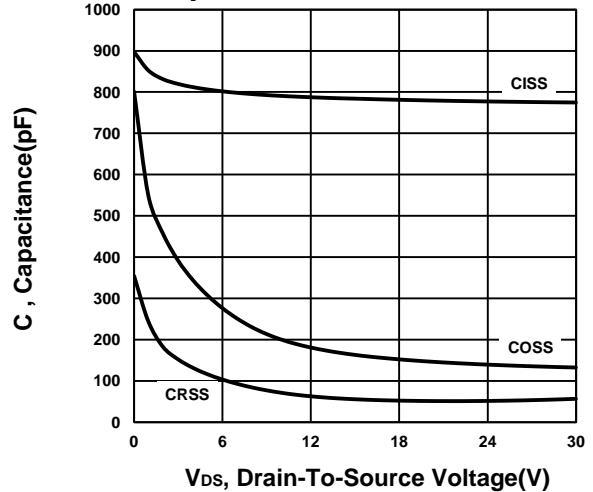
On-Resistance VS Drain Current



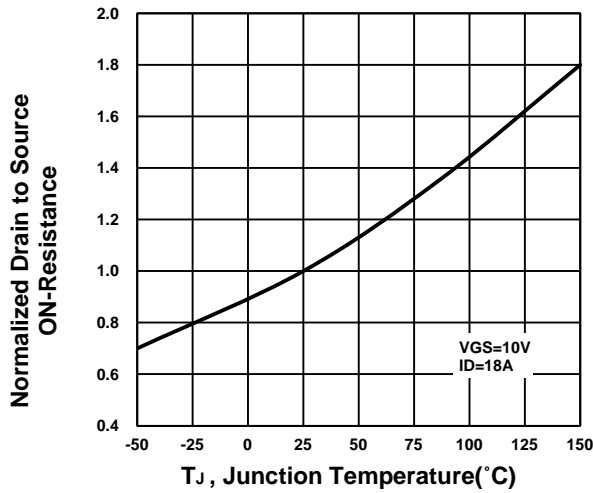
Gate charge Characteristics



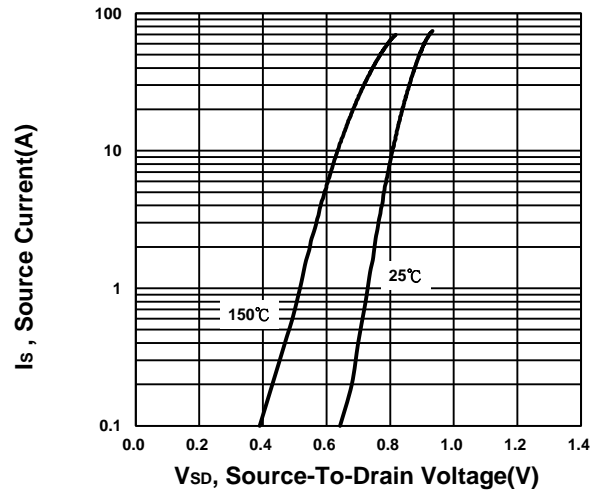
Capacitance Characteristic



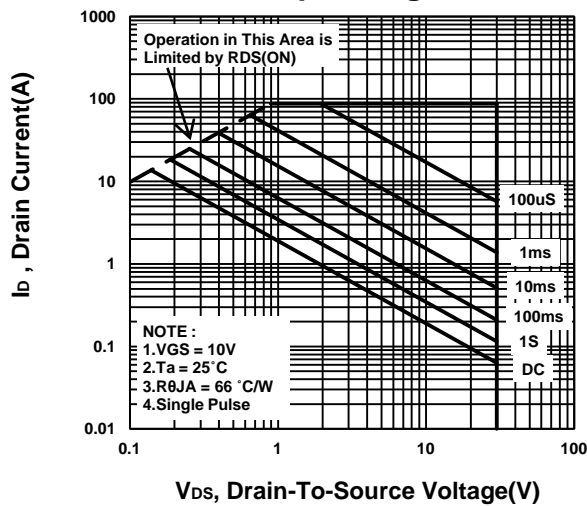
On-Resistance VS Temperature



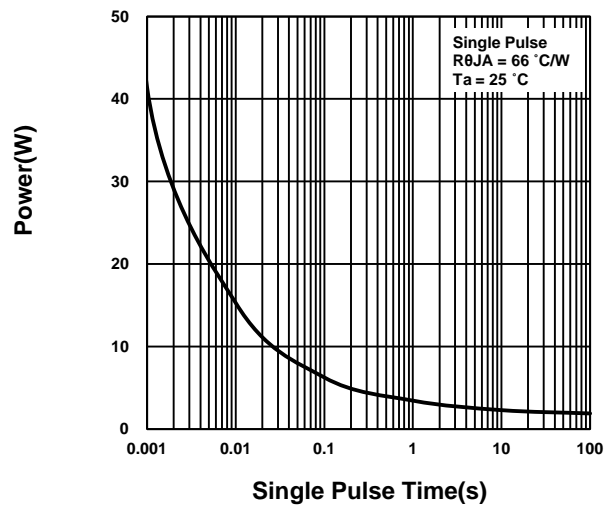
Source-Drain Diode Forward Voltage



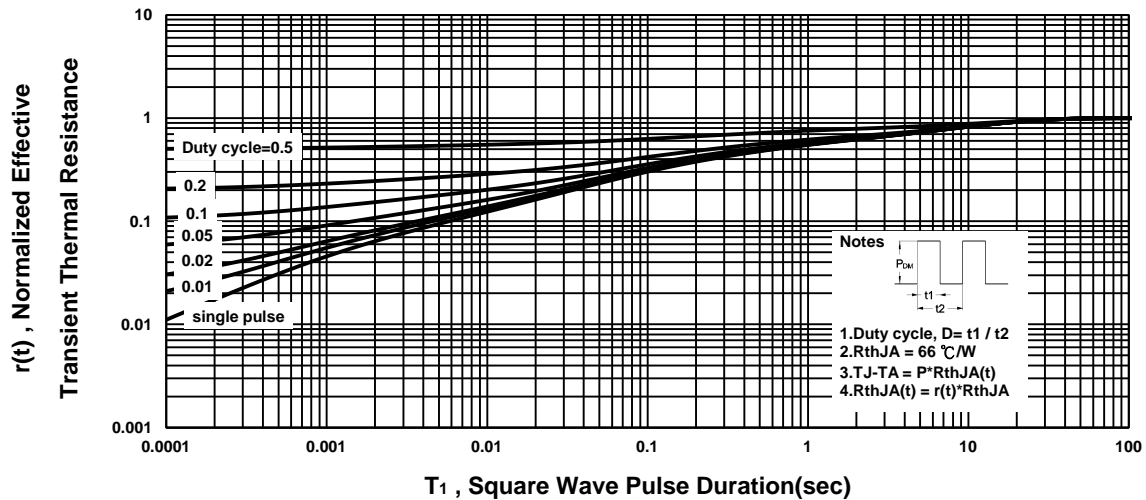
Safe Operating Area



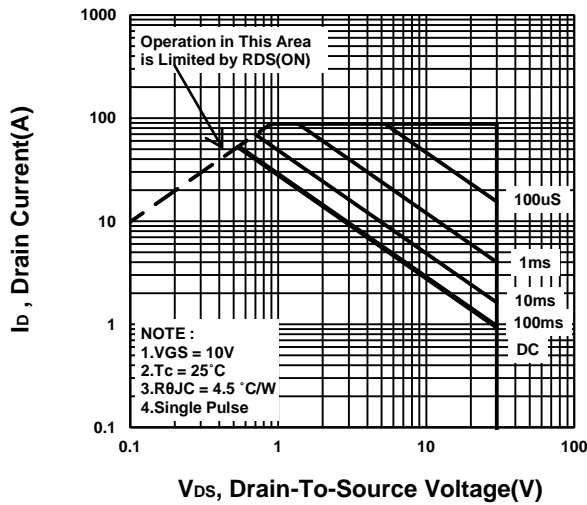
Single Pulse Maximum Power Dissipation



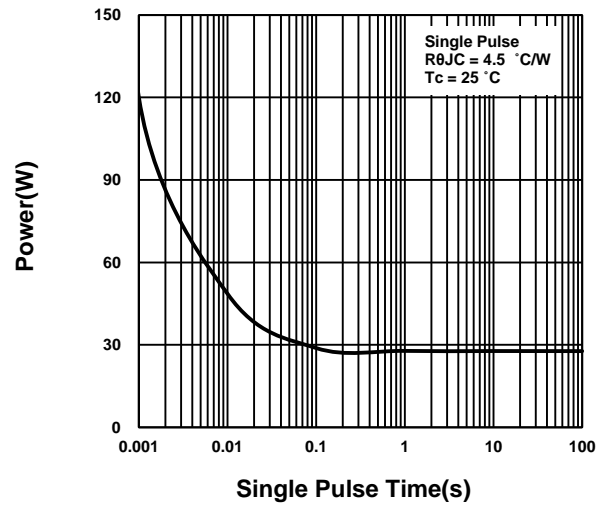
Transient Thermal Response Curve



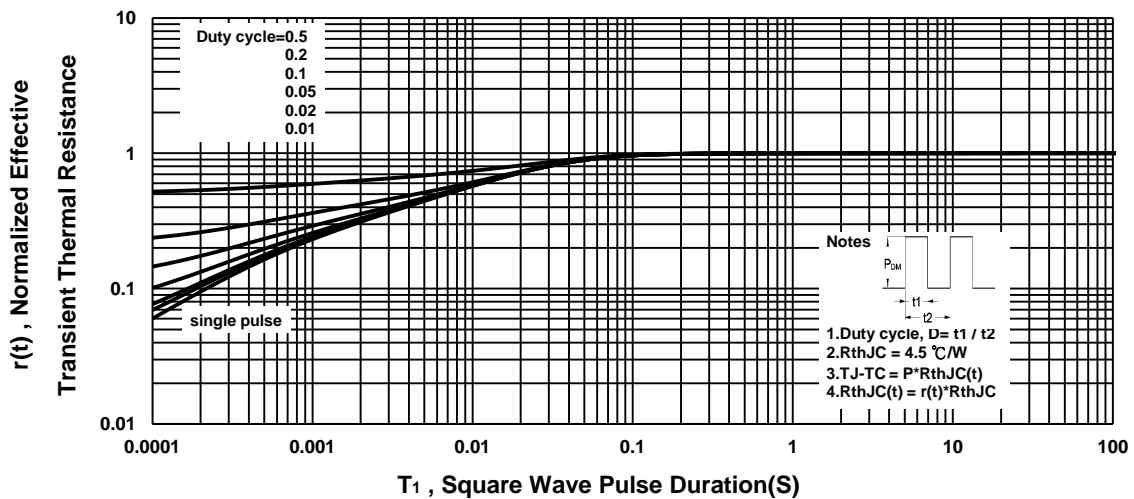
Safe Operating Area



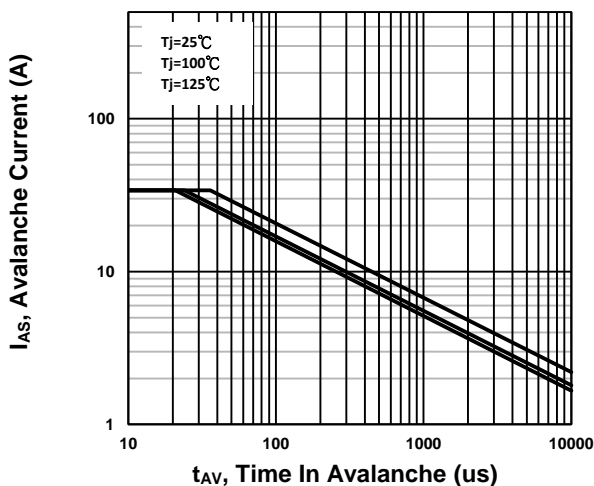
Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

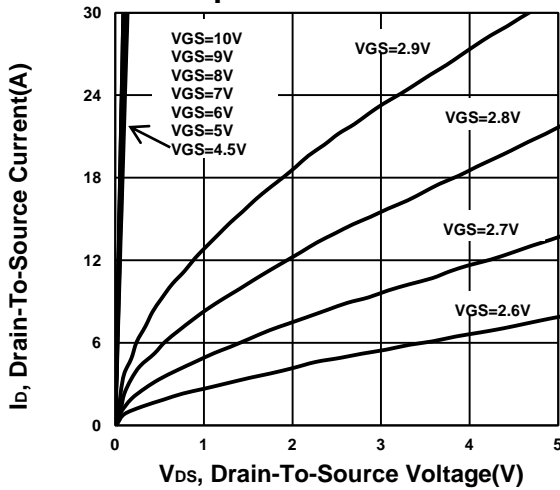


Unclamped Inductive Switching Capability

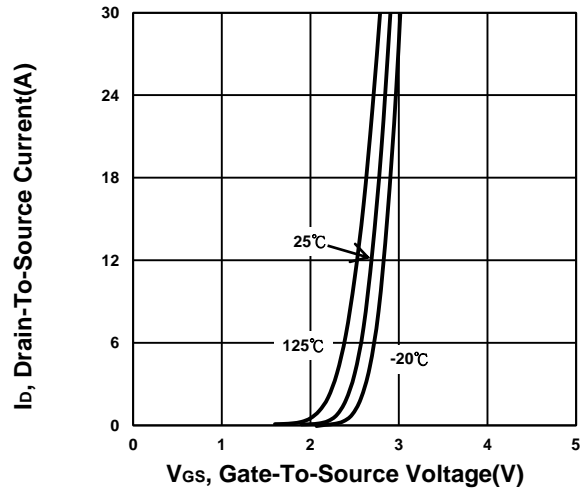


Q1

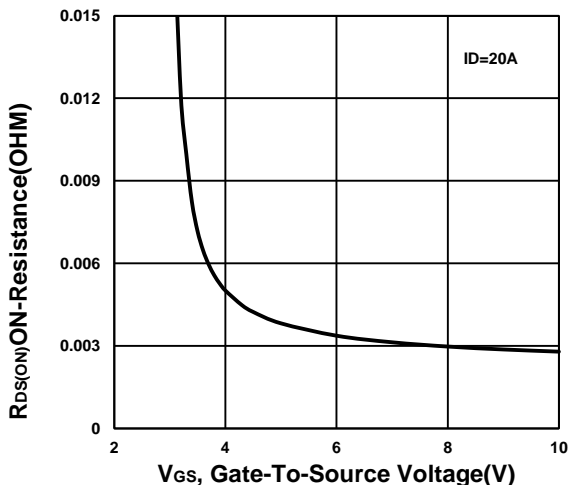
Output Characteristics



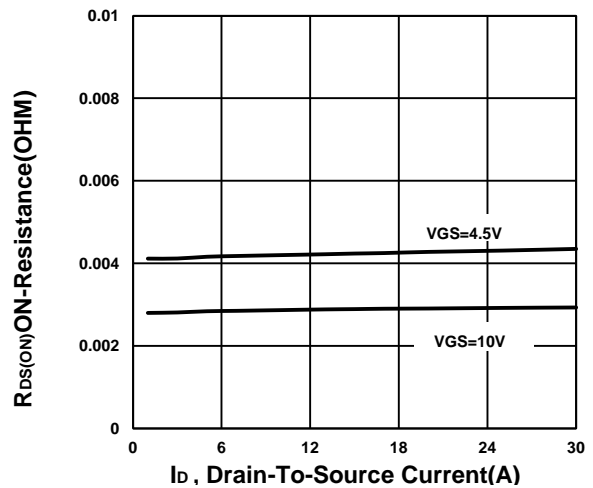
Transfer Characteristics



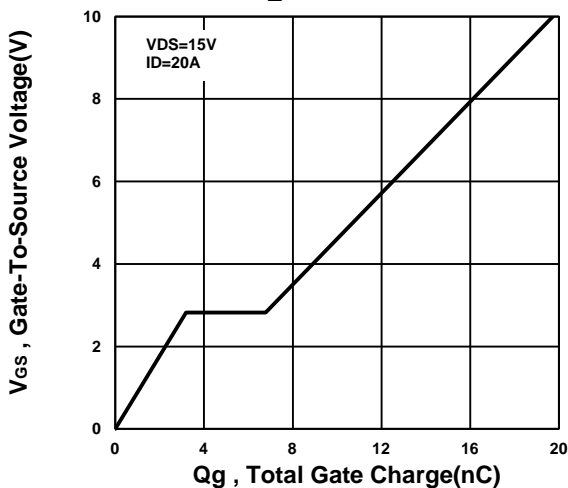
On-Resistance VS Gate-To-Source Voltage



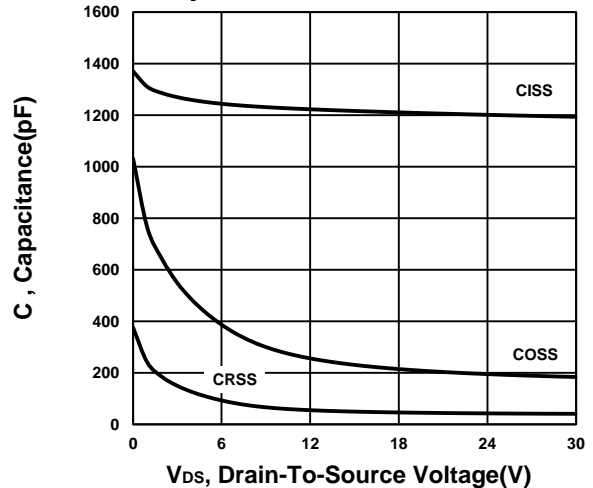
On-Resistance VS Drain Current



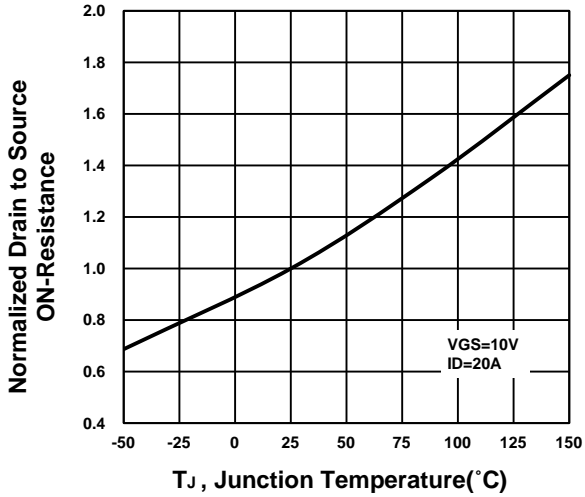
Gate charge Characteristics



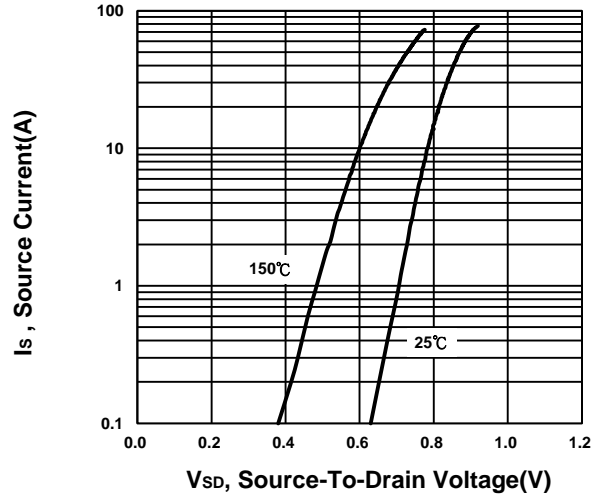
Capacitance Characteristic



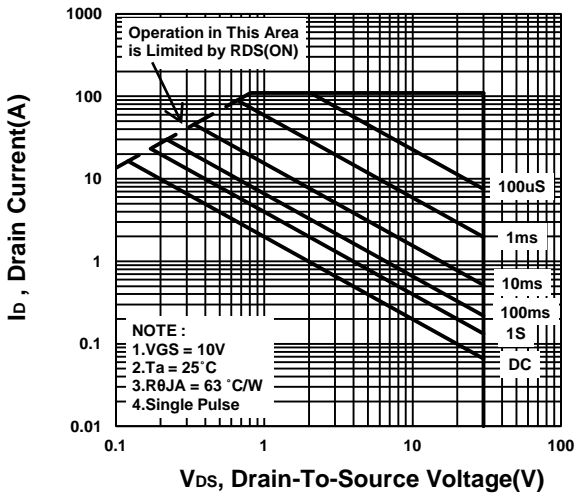
On-Resistance VS Temperature



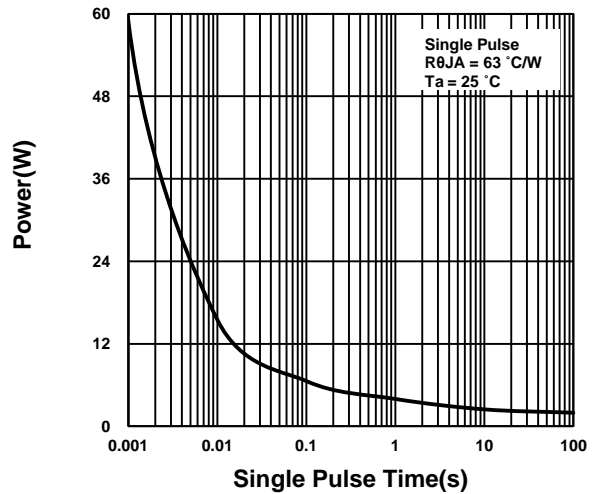
Source-Drain Diode Forward Voltage



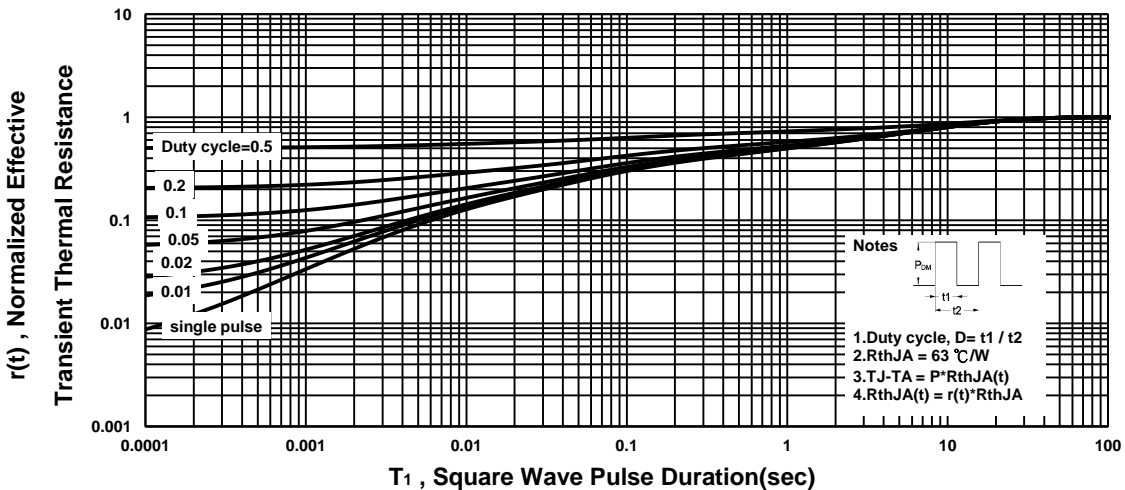
Safe Operating Area



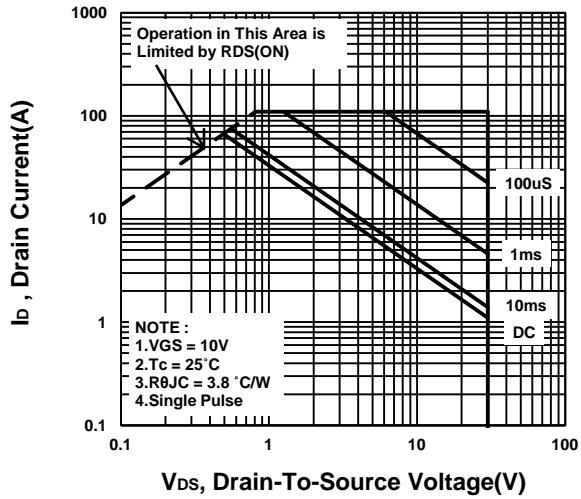
Single Pulse Maximum Power Dissipation



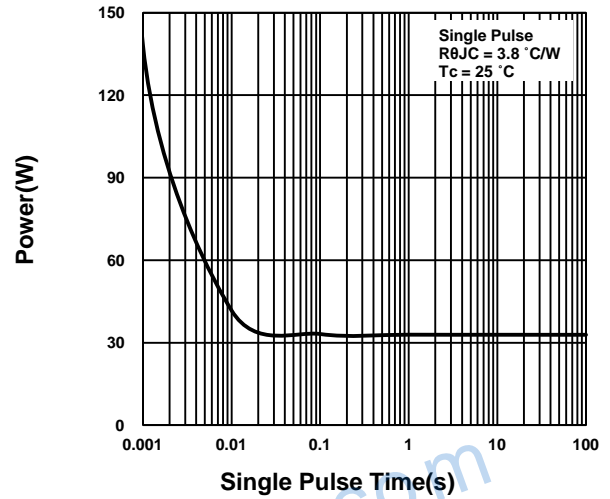
Transient Thermal Response Curve



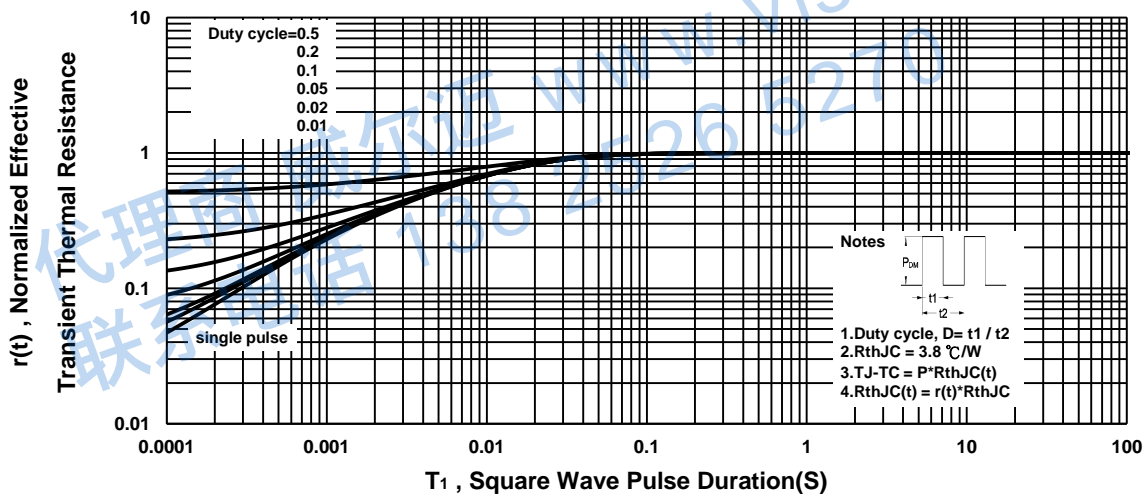
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



Unclamped Inductive Switching Capability

