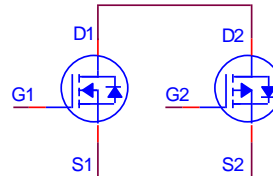


PRODUCT SUMMARY

	$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
Q2	-30V	28m Ω	-25A
Q1	30V	22m Ω	23A

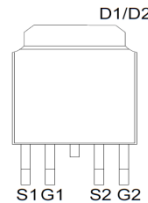


Features

- 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.



G. GATE
D. DRAIN
S. SOURCE

100% UIS Tested
100% Rg Tested

ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$ 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 ²	$T_C = 25\text{ }^\circ\text{C}$	I_D	-25	23	A
	$T_C = 100\text{ }^\circ\text{C}$		-16	15	
Pulsed Drain Current ¹		I_{DM}	-65	55	
Avalanche Current		I_{AS}	-20	13	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	20	8.4	mJ
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	32	24	W
	$T_C = 100\text{ }^\circ\text{C}$		12.8	9.6	
Operating Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150		$^\circ\text{C}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	R _{θJA}	Q2	62.5	°C / W
		Q1	62.5	
Junction-to-Case	R _{θJC}	Q2	3.9	
		Q1	5.2	

¹Pulse width limited by maximum junction temperature.

²Package limitation current :Q1=15A,Q2=-15A

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	
		V _{GS} = 0V, I _D = 250μA	Q1	30			
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250μA	Q2	-1	-1.6		-2.5
		V _{DS} = V _{GS} , I _D = 250μA	Q1	1	1.6		2.5
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V	Q2			±100	
		V _{DS} = 0V, V _{GS} = ±20V	Q1			±100	
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -24V, V _{GS} = 0V	Q2			-1	
		V _{DS} = 24V, V _{GS} = 0V	Q1			1	
		V _{DS} = -20V, V _{GS} = 0V, T _J = 55 °C	Q2				-10
		V _{DS} = 20V, V _{GS} = 0V, T _J = 55 °C	Q1				10
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = -4.5V, I _D = -5A	Q2		27.6	45	
		V _{GS} = 4.5V, I _D = 6A	Q1		17	32	
		V _{GS} = -10V, I _D = -6A	Q2		18	28	
		V _{GS} = 10V, I _D = 7A	Q1		12.7	22	
Forward Transconductance ¹	g _{fs}	V _{DS} = -5V, I _D = -6A	Q2		20		
		V _{DS} = 5V, I _D = 7A	Q1		33		
DYNAMIC							
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -15V, f = 1MHz Q1 V _{GS} = 0V, V _{DS} = 15V, f = 1MHz	Q2		934		
			Q1		343		
Output Capacitance	C _{oss}		Q2		152		
			Q1		74		
Reverse Transfer Capacitance	C _{rss}		Q2		126		
			Q1		46		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	Q2		12		
			Q1		3		

Total Gate Charge ²	Q _g	V _{GS} = 10V	Q2 V _{DS} = -15V, V _{GS} = -10V, I _D = -6A Q1 V _{DS} = 15V, V _{GS} = 10V, I _D = 7A	Q2	21	nC
		V _{GS} = 4.5V		Q1	7.7	
Gate-Source Charge ²	Q _{gs}			Q2	11	
				Q1	4.4	
Gate-Drain Charge ²	Q _{gd}			Q2	2	
				Q1	1	
Turn-On Delay Time ²	t _{d(on)}			Q2	5.2	
				Q1	1.8	
Rise Time ²	t _r	Q2, V _{DS} = -15V, I _D ≅ -6A, V _{GS} = -10V, R _{GEN} = 6Ω	Q2	12	nS	
			Q1	9		
Turn-Off Delay Time ²	t _{d(off)}			Q2		43
				Q1		45
Fall Time ²	t _f	Q1, V _{DS} = 15V, I _D ≅ 7A, V _{GS} = 10V, R _{GEN} = 6Ω	Q2	90		
			Q1	19		
				Q2		73
				Q1		59
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current ³	I _S		Q2	-32	A	
			Q1	21		
Forward Voltage ¹	V _{SD}	I _F = -6A, V _{GS} = 0V	Q2	-1	V	
		I _F = 7A, V _{GS} = 0V	Q1	1.1		
Reverse Recovery Time	t _{rr}	Q2 I _F = -6A, di _F /dt = 100A / μS	Q2	11	nS	
			Q1	9.5		
Reverse Recovery Charge	Q _{rr}	Q1 I _F = 7A, di _F /dt = 100A / μS	Q2	4.7	nC	
			Q1	3.4		

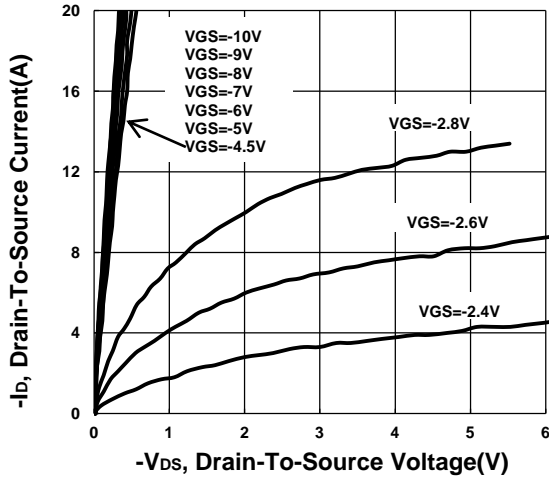
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

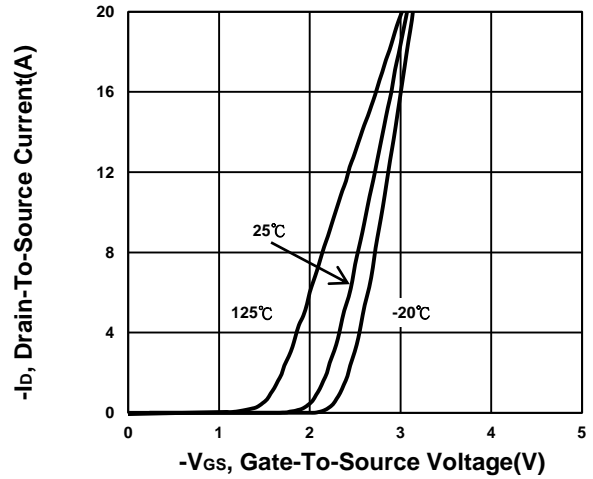
³Package limitation current :Q1=15A,Q2=-15A

Typical performance characteristics
Q2 P-Channel

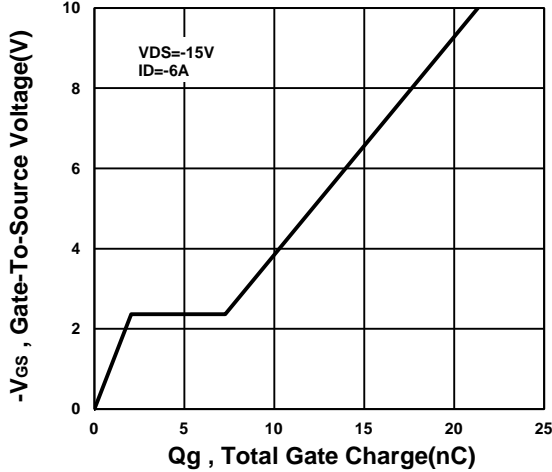
Output Characteristics



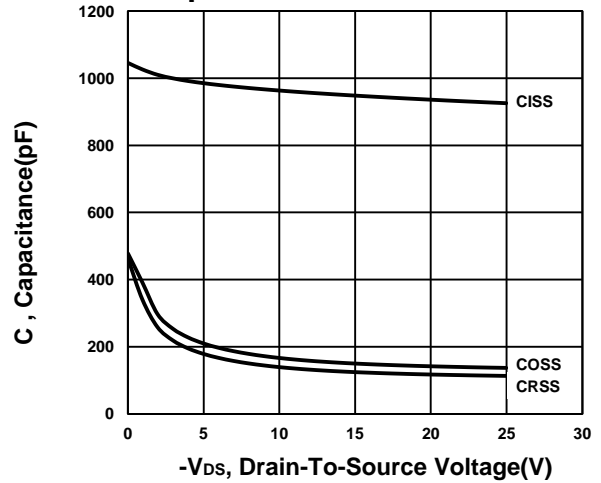
Transfer Characteristics



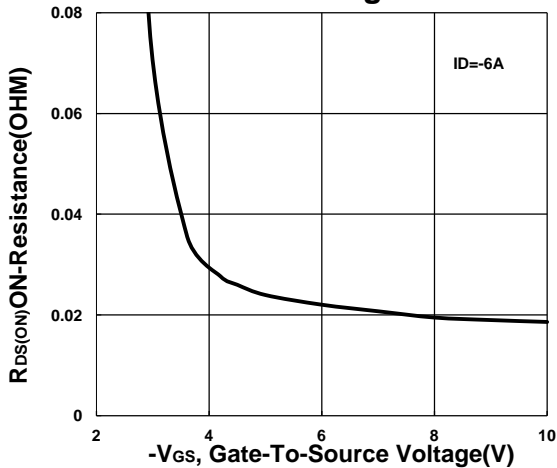
Gate charge Characteristics



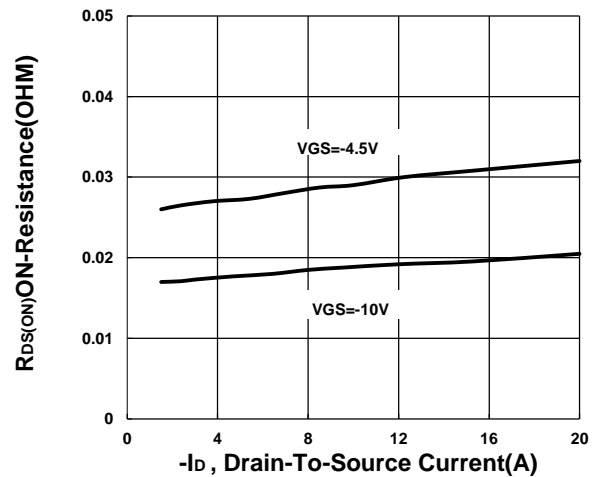
Capacitance Characteristic



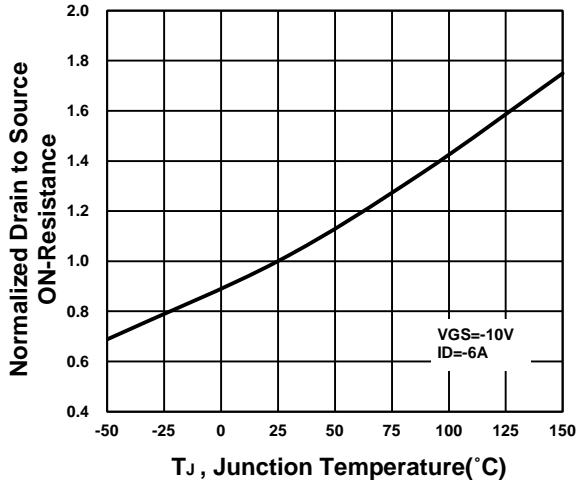
On-Resistance VS Gate-To-Source Voltage



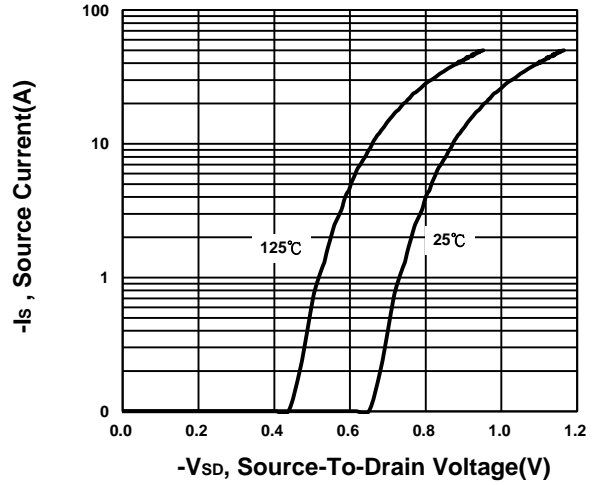
On-Resistance VS Drain Current



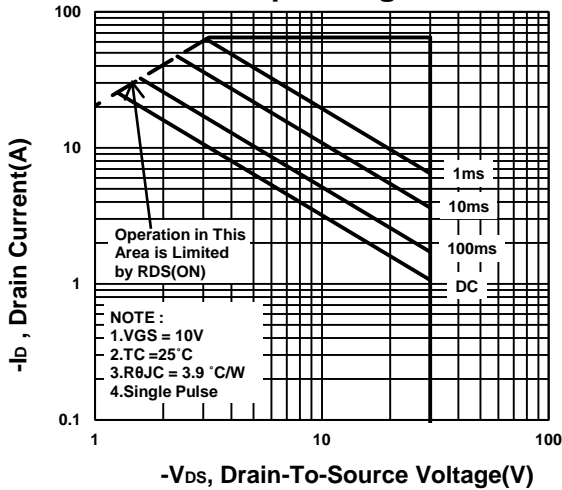
On-Resistance VS Temperature



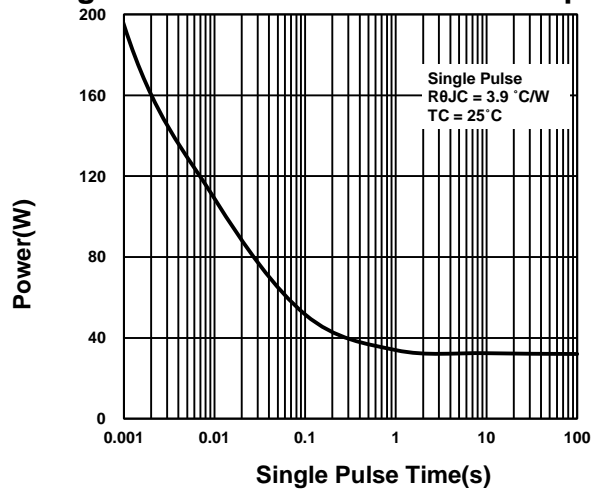
Source-Drain Diode Forward Voltage



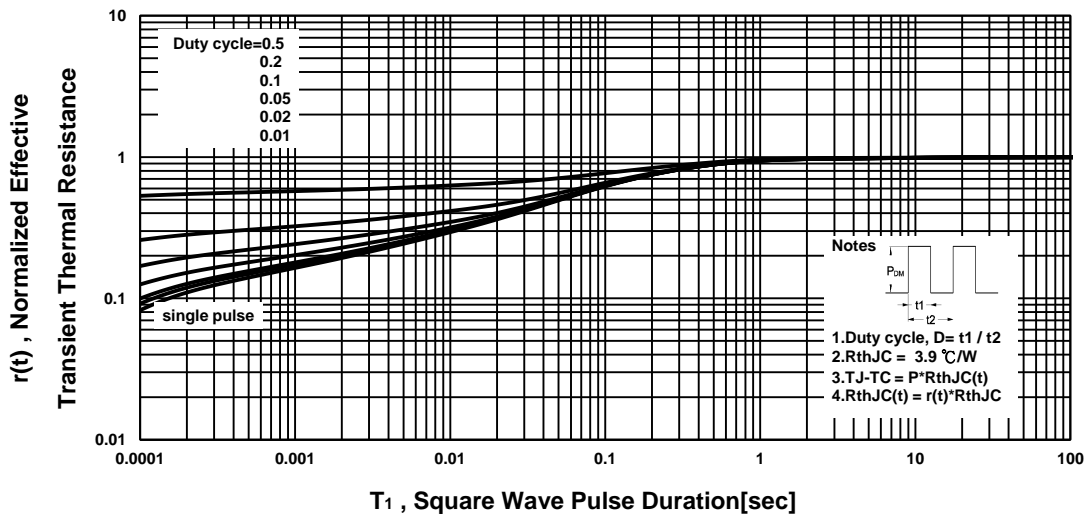
Safe Operating Area



Single Pulse Maximum Power Dissipation

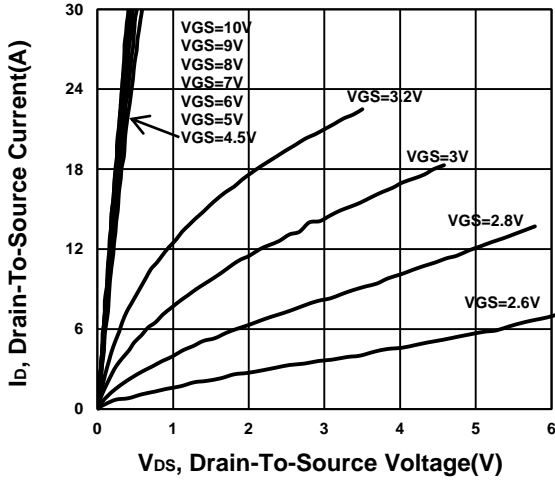


Transient Thermal Response Curve

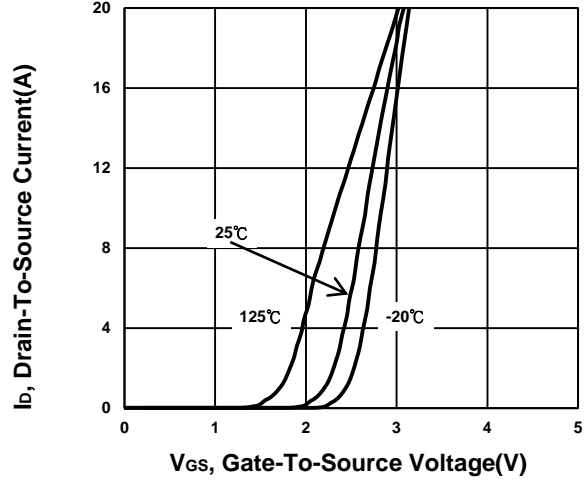


Q1 N- Channel

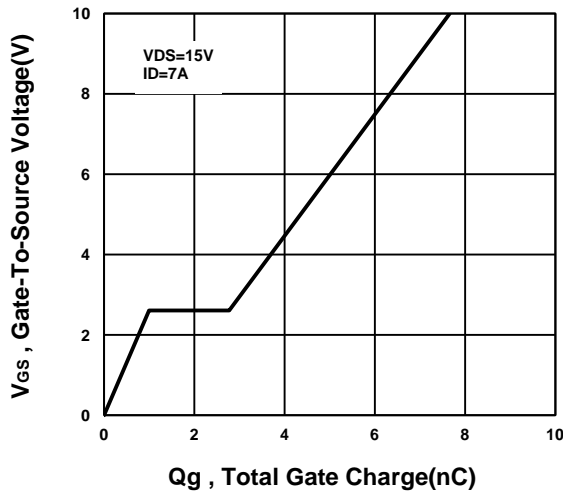
Output Characteristics



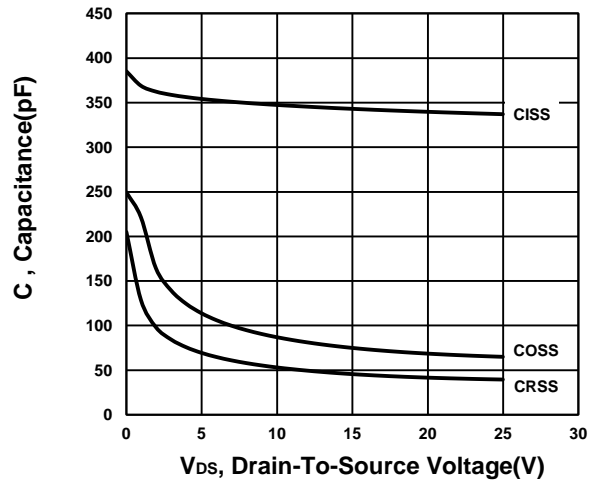
Transfer Characteristics



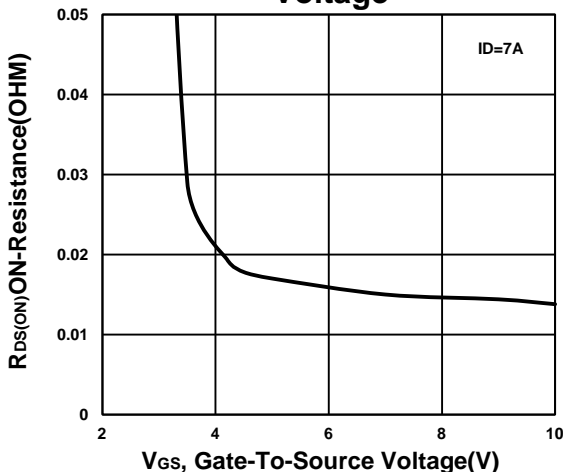
Gate charge Characteristics



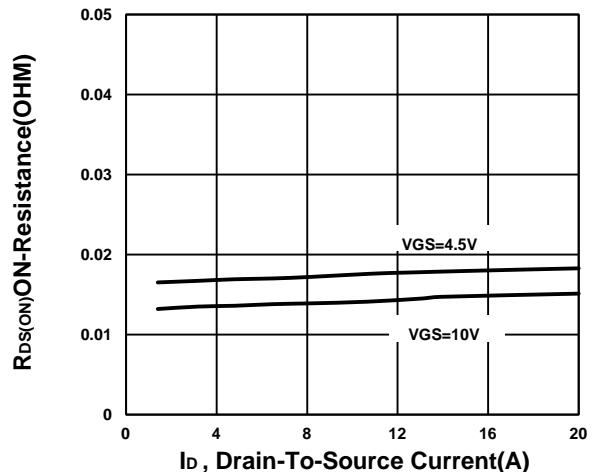
Capacitance Characteristic



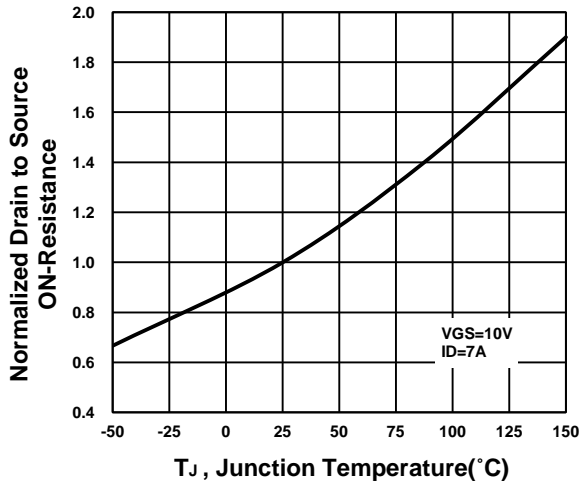
On-Resistance VS Gate-To-Source Voltage



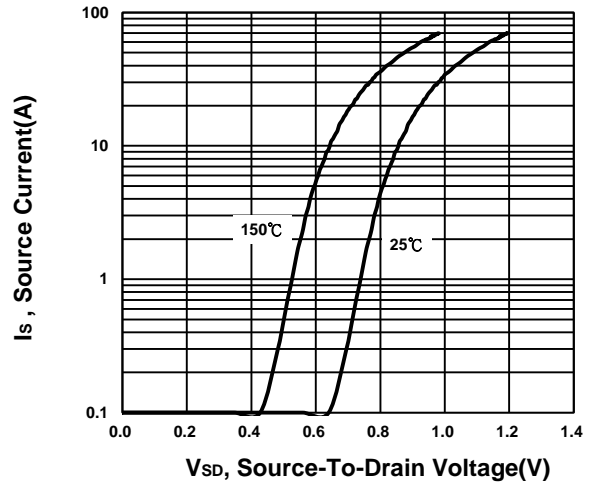
On-Resistance VS Drain Current



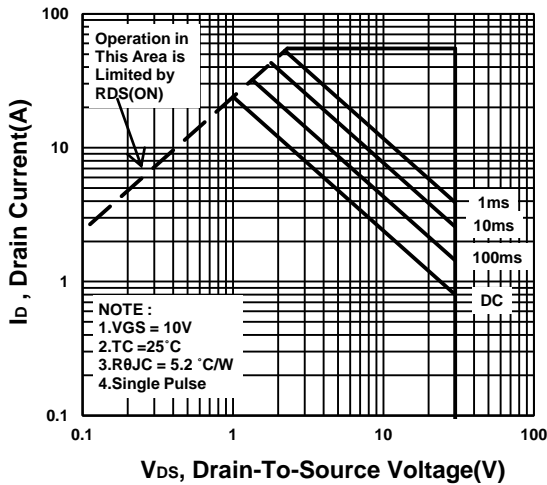
On-Resistance VS Temperature



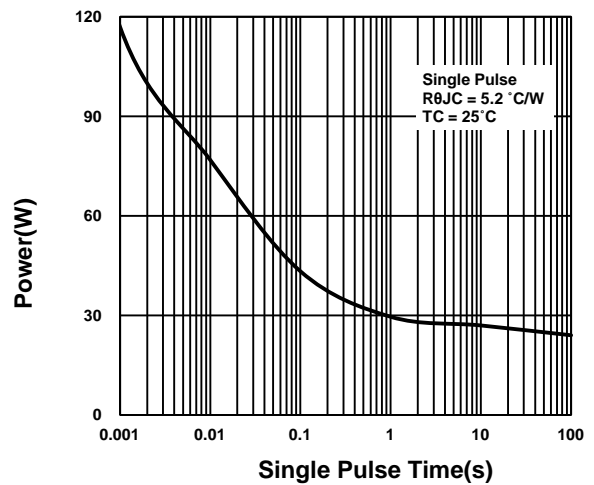
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

