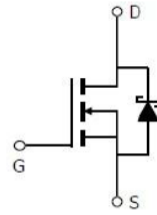


PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	5mΩ	42A

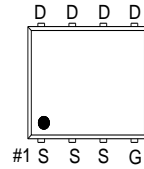


Features

- 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.
- Products Integrated Schottky Diode.

Applications

- Computer for DC to DC Converters Applications.



G : GATE
D : DRAIN
S : SOURCE

ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ °C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current ³	$T_C = 25\text{ °C}$	I_D	42	A
	$T_C = 100\text{ °C}$		26	
	$T_A = 25\text{ °C}$		16	
	$T_A = 70\text{ °C}$		13	
Pulsed Drain Current ¹		I_{DM}	80	
Avalanche Current		I_{AS}	25	
Avalanche Energy	L = 0.1mH	E_{AS}	31	mJ
Power Dissipation ⁴	$T_C = 25\text{ °C}$	P_D	17.8	W
	$T_C = 100\text{ °C}$		7	
	$T_A = 25\text{ °C}$		2.7	
	$T_A = 70\text{ °C}$		1.7	
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 ≤ 10s	R _{θJA}		45	°C / W
	Steady-State	R _{θJA}		65	
Junction-to-Case	Steady-State	R _{θJC}		7	

¹Pulse width limited by maximum junction temperature.

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.

³Package limitation current is 27A

⁴The Power dissipation is based on R_{θJA} t ≤ 10s value.

ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

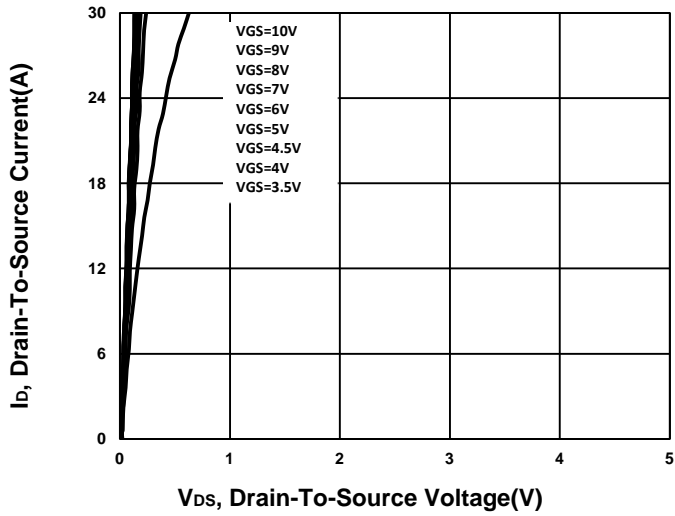
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 1mA	30			V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.35	1.85	2.3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 24V, V _{GS} = 0V			0.5	mA
		V _{DS} = 20V, V _{GS} = 0V, T _J = 55 °C			5	
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 4.5V, I _D = 15A		5.7	7.8	mΩ
		V _{GS} = 10V, I _D = 15A		3.9	5	
Forward Transconductance ¹	g _{fs}	V _{DS} = 5V, I _D = 15A		50		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz	960	1200	1440	pF
Output Capacitance	C _{oss}		188	235	282	
Reverse Transfer Capacitance	C _{rss}		91	152	212	
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz	1.2	2.4	3.6	Ω
Total Gate Charge ²	Q _{g(VGS=10V)}	V _{DS} = 15V, I _D = 15A	20	25	30	nC
	Q _{g(VGS=4.5V)}		10.4	13	16	
Gate-Source Charge ²	Q _{gs}		2.6	3.3	4	
Gate-Drain Charge ²	Q _{gd}		4.8	8	11.2	

Turn-On Delay Time ²	$t_{d(on)}$	$V_{DD} = 15V$ $I_D \cong 15A, V_{GEN} = 10V, R_G = 6\Omega$		19		nS
Rise Time ²	t_r			10		
Turn-Off Delay Time ²	$t_{d(off)}$			40		
Fall Time ²	t_f			12		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25\text{ }^\circ\text{C}$)						
Continuous Current	I_S				17.8	A
Forward Voltage ¹	V_{SD}	$I_F = 15A, V_{GS} = 0V$			1	V
Reverse Recovery Time	t_{rr}	$I_F = 15A, di_F/dt = 100A / \mu S$	5.5	11	22	nS
Reverse Recovery Charge	Q_{rr}		0.8	1.5	3	nC

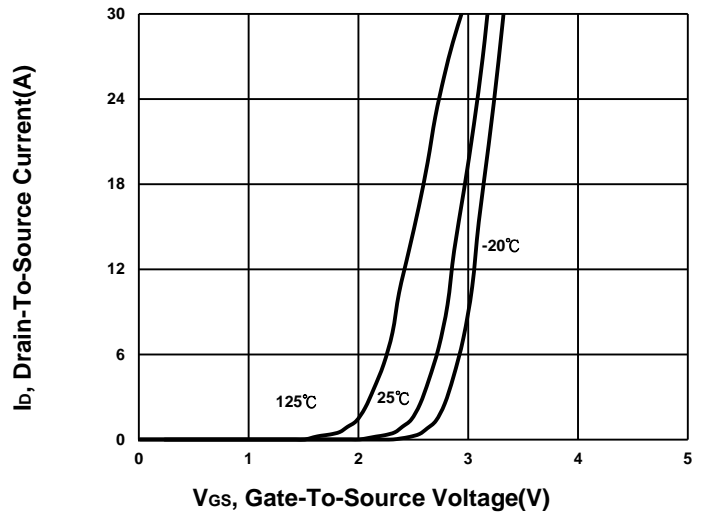
¹Pulse test : Pulse Width $\leq 300\ \mu\text{sec}$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

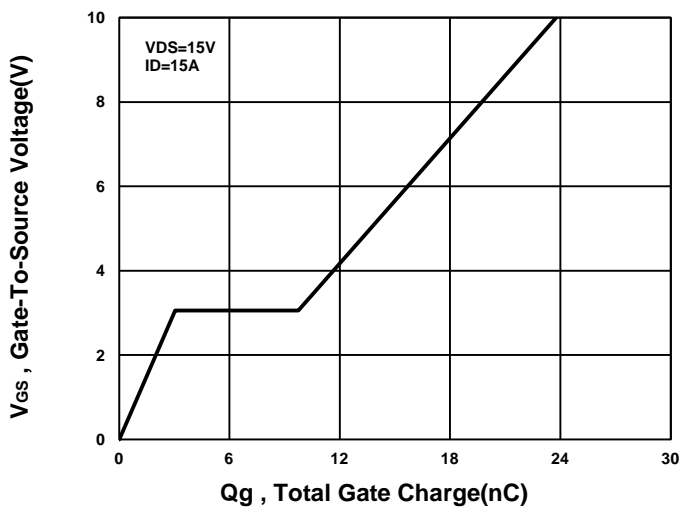
Output Characteristics



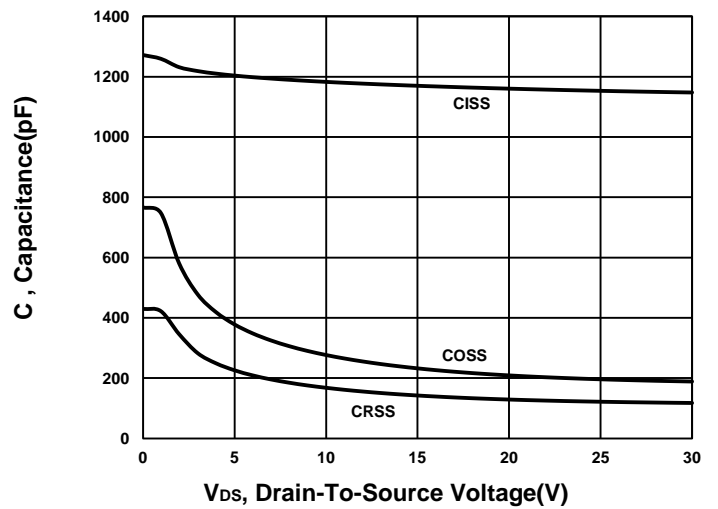
Transfer Characteristics



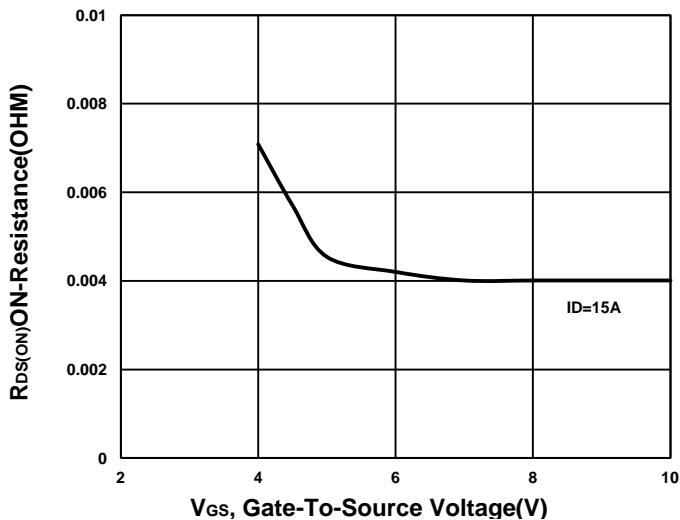
Gate charge Characteristics



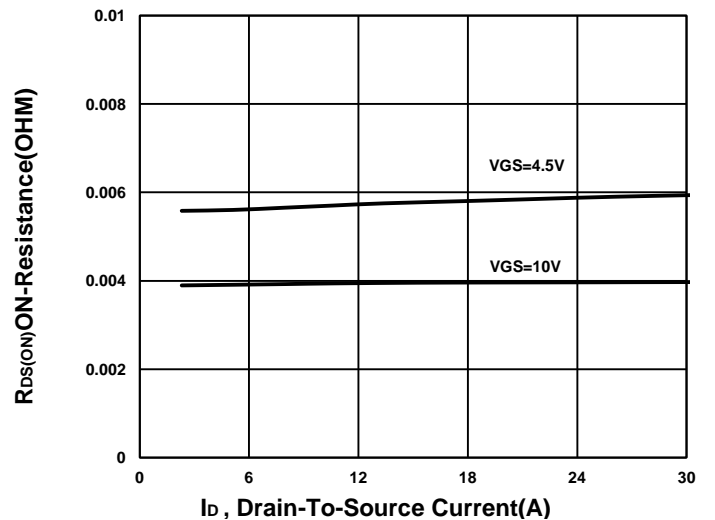
Capacitance Characteristic



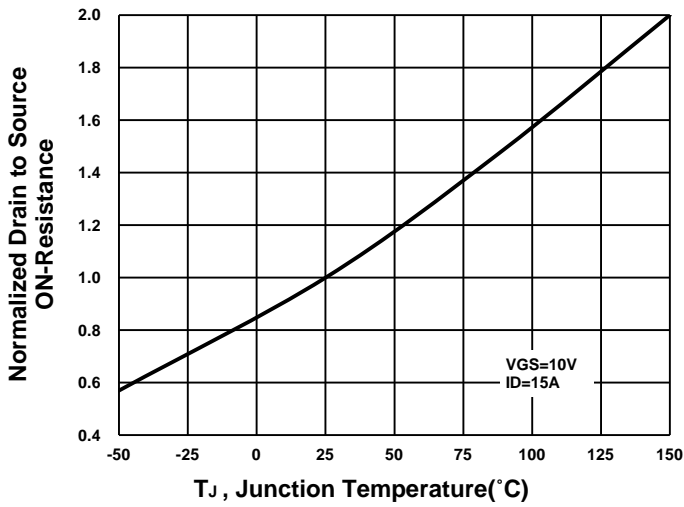
On-Resistance VS Gate-To-Source



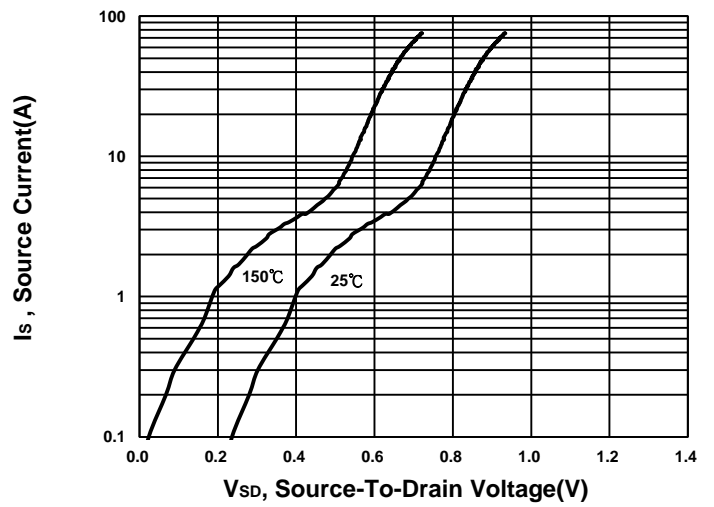
On-Resistance VS Drain Current



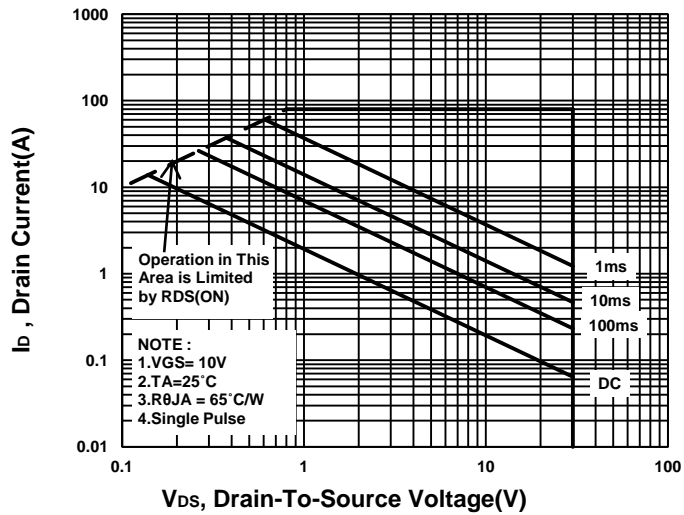
On-Resistance VS Temperature



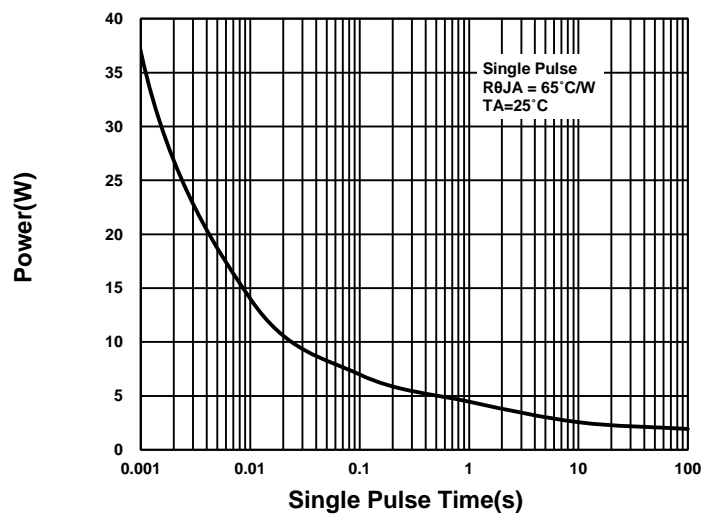
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

