

PRODUCT SUMMARY

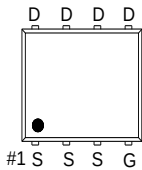
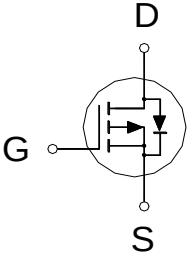
$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-30V	45mΩ	-14A

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.



G. GATE
D. DRAIN
S. SOURCE

100% UIS Tested
100% Rg Tested

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °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	$T_C = 25\text{ °C}$	I_D	-14	A
	$T_C = 100\text{ °C}$		-9.3	
	$T_A = 25\text{ °C}$		-5.4	
	$T_A = 70\text{ °C}$		-4.3	
Pulsed Drain Current ¹		I_{DM}	-38	
Avalanche Current		I_{AS}	-14	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	9.9	mJ
Power Dissipation ³	$T_C = 25\text{ °C}$	P_D	17	W
	$T_C = 100\text{ °C}$		6.9	
	$T_A = 25\text{ °C}$		2.3	
	$T_A = 70\text{ °C}$		1.5	
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	$t \leq 10s$	$R_{\theta JA}$		53	°C / W
Junction-to-Ambient ²	Steady-State	$R_{\theta JA}$		68	
Junction-to-Case	Steady-State	$R_{\theta JC}$		7.2	

¹Pulse width limited by maximum junction temperature.

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 $T_A = 25^\circ\text{C}$.

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

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

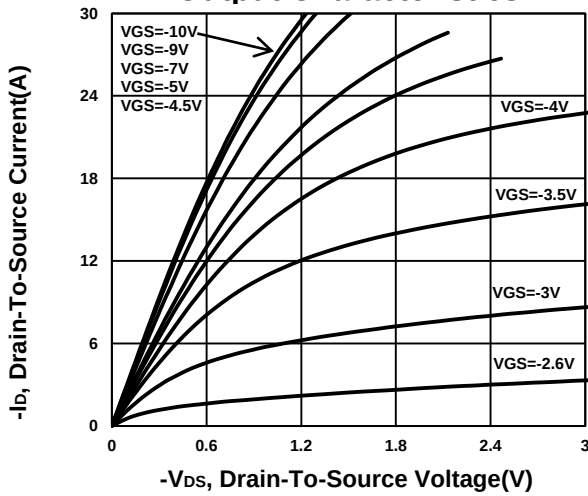
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.3	-1.67	-2.3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -30V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -30V, V_{GS} = 0V, T_J = 55\text{ }^{\circ}C$			-10	
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = -10V, I_D = -12A$		32	45	$m\Omega$
		$V_{GS} = -4.5V, I_D = -12A$		50	75	
Forward Transconductance ¹	g_{fs}	$V_{DS} = -5V, I_D = -12A$		15.3		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = -15V, f = 1MHz$		580		pF
Output Capacitance	C_{oss}			83		
Reverse Transfer Capacitance	C_{rss}			62		
Gate Resistance	R_g	$f = 1MHz$		14		Ω
Total Gate Charge ²	$Q_{g(VGS=-10V)}$	$V_{DS} = -15V, I_D = -12A$		11.8		nC
	$Q_{g(VGS=-4.5V)}$			6		
Gate-Source Charge ²	Q_{gs}			1.7		
Gate-Drain Charge ²	Q_{gd}			2.9		

Turn-On Delay Time ²	t _{d(on)}	V _{DD} = -15V I _D ≅ -12A, V _{GS} = -10V, R _{GEN} = 6 Ω		6		nS
Rise Time ²	t _r			60		
Turn-Off Delay Time ²	t _{d(off)}			37		
Fall Time ²	t _f			79		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)						
Continuous Current	I _S				-14	A
Forward Voltage ¹	V _{SD}	I _F = -12A, V _{GS} = 0V			-1.2	V
Reverse Recovery Time	t _{rr}	I _F = -12A, dI/dt = 100A/μs		6		nS
Reverse Recovery Charge	Q _{rr}			1.4		nC

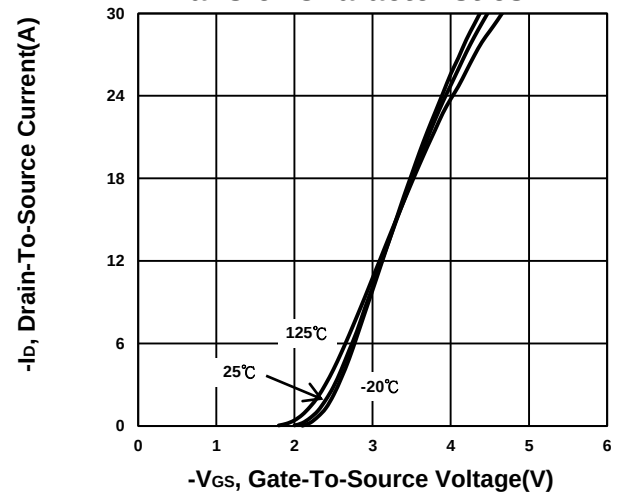
¹Pulse test : Pulse Width $\leq 300\text{ }\mu\text{sec}$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

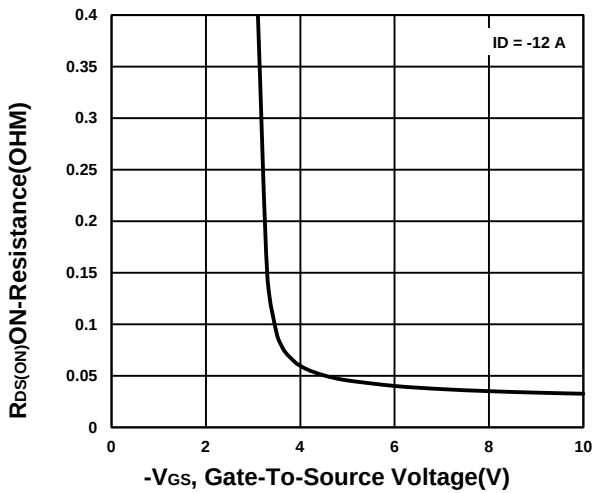
Output Characteristics



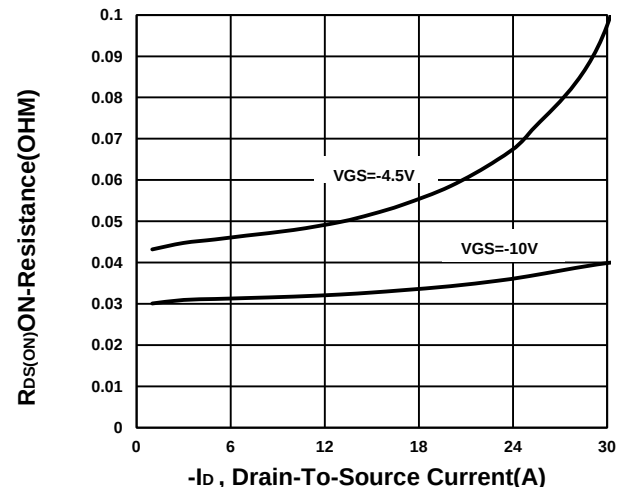
Transfer Characteristics



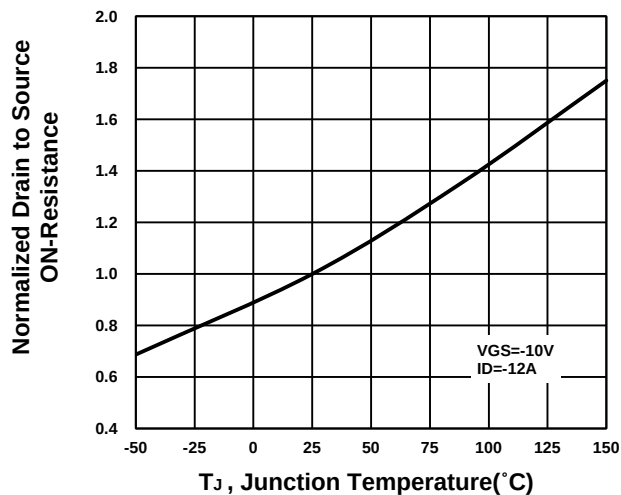
On-Resistance VS Gate-To-Source Voltage



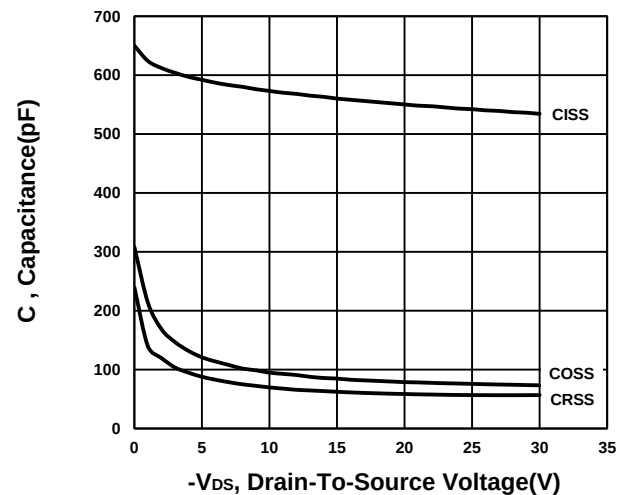
On-Resistance VS Drain Current



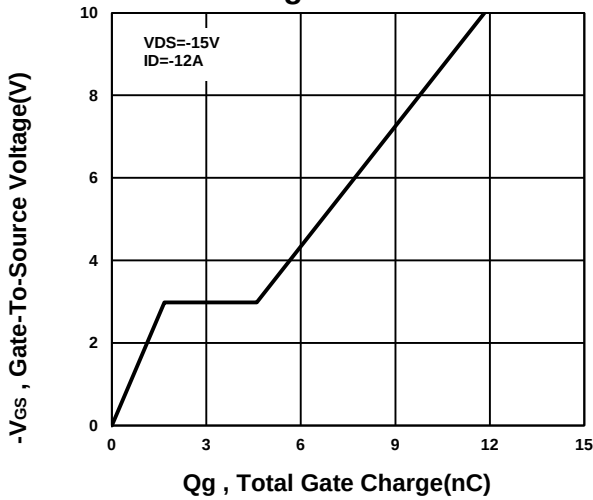
On-Resistance VS Temperature



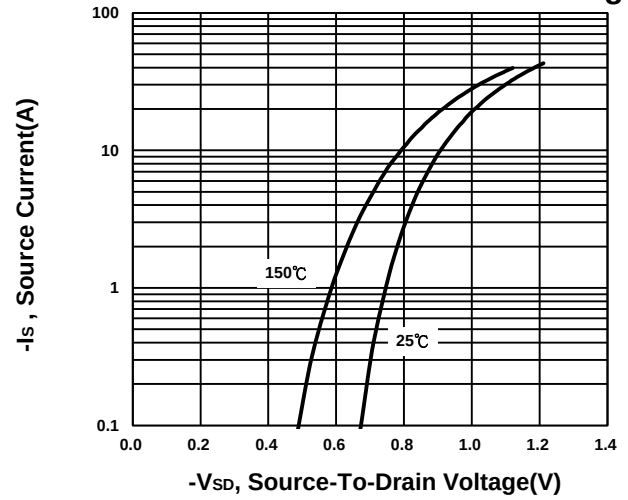
Capacitance Characteristic



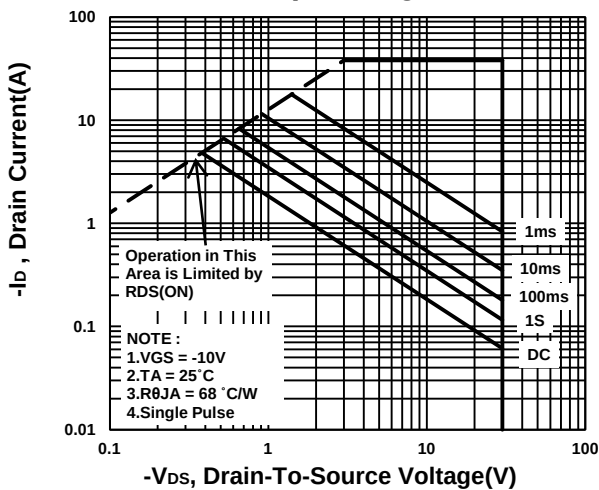
Gate charge Characteristics



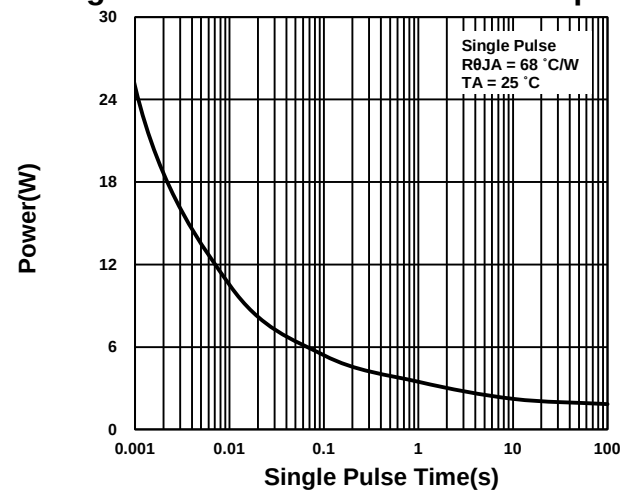
Source-Drain Diode Forward Voltage



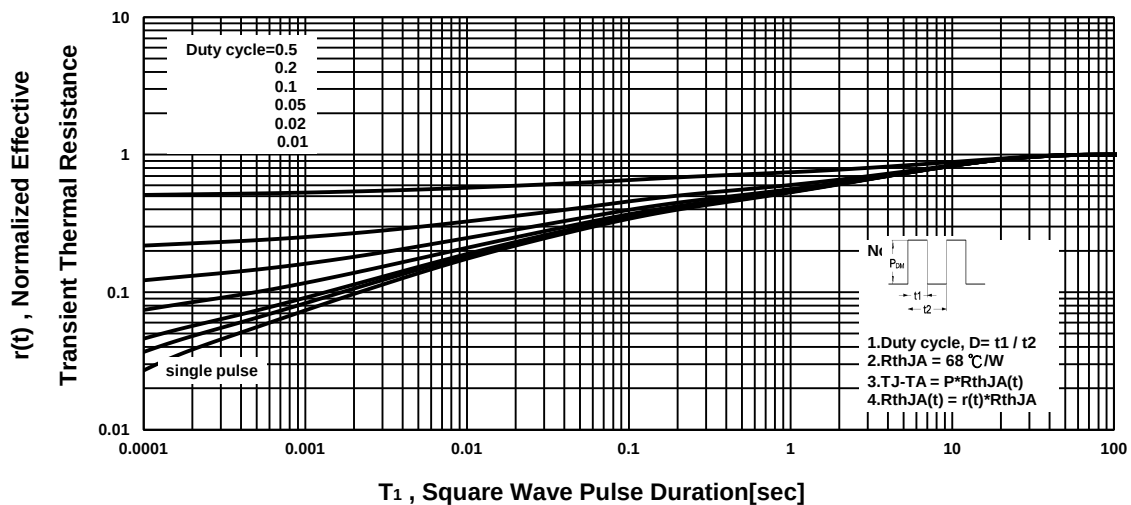
Safe Operating Area



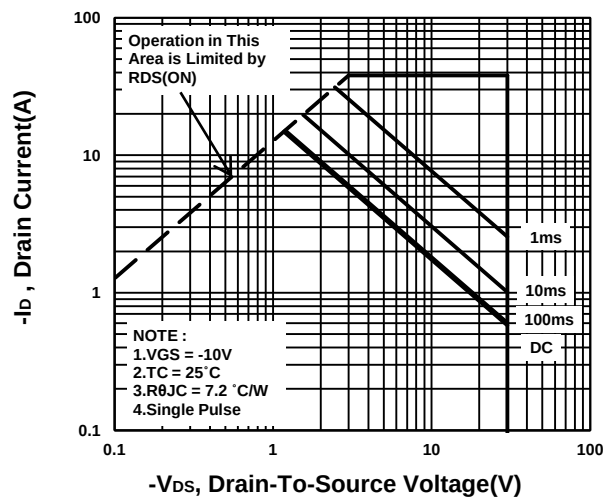
Single Pulse Maximum Power Dissipation



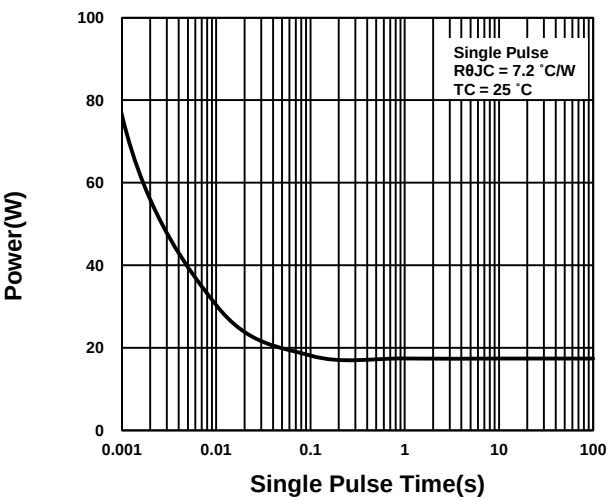
Transient Thermal Response Curve



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

