

PRODUCT SUMMARY

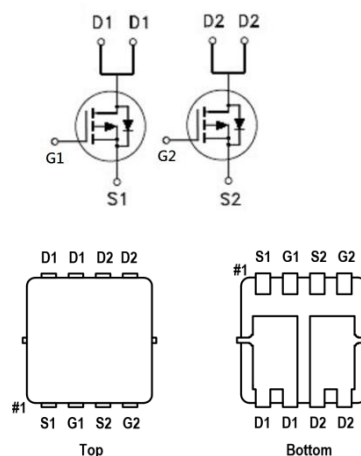
$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-20V	20m Ω	-30A


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.


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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	-20	V
Gate-Source Voltage		V_{GS}	± 12	V
Continuous Drain Current ⁴	$T_C = 25\text{ }^{\circ}\text{C}$	I_D	-30	A
	$T_C = 100\text{ }^{\circ}\text{C}$		-19	
	$T_A = 25\text{ }^{\circ}\text{C}$		-8.8	
	$T_A = 70\text{ }^{\circ}\text{C}$		-7	
Pulsed Drain Current ¹		I_{DM}	-40	
Avalanche Current		I_{AS}	-21.5	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	23	mJ
Power Dissipation ³	$T_C = 25\text{ }^{\circ}\text{C}$	P_D	29	W
	$T_C = 100\text{ }^{\circ}\text{C}$		11	
	$T_A = 25\text{ }^{\circ}\text{C}$		2.5	
	$T_A = 70\text{ }^{\circ}\text{C}$		1.6	
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 ²	$t \leq 10\text{s}$	$R_{\theta JA}$		50	$^{\circ}\text{C}/\text{W}$
Junction-to-Ambient ²	Steady-State	$R_{\theta JA}$		72	
Junction-to-Case	Steady-State	$R_{\theta JC}$		4.3	

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. Coppe.

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

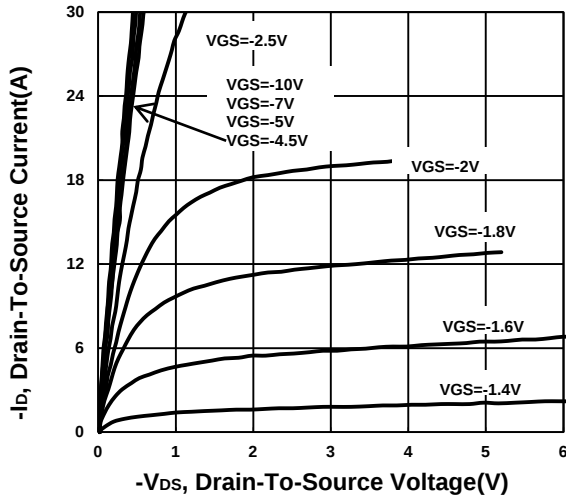
⁴Package limitation current is -9A.

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

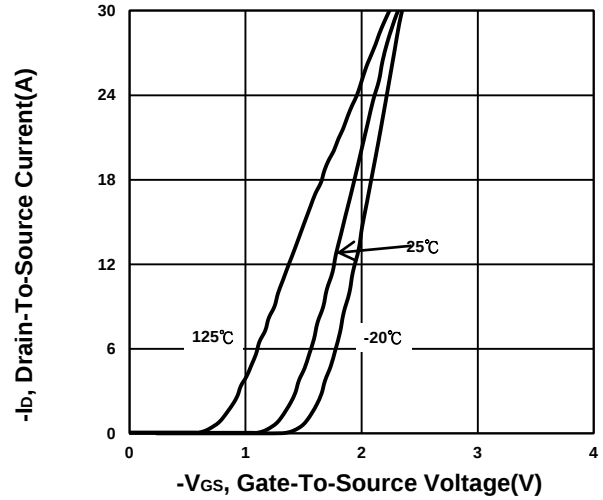
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-20			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-0.65	-0.77	-1.2	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 12V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -16V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -10V, V_{GS} = 0V, T_J = 55\text{ }^{\circ}C$			-10	
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = -2.5V, I_D = -2A$		26	35	m Ω
		$V_{GS} = -4.5V, I_D = -2.5A$		19	25	
		$V_{GS} = -10V, I_D = -2.5A$		16	20	
Forward Transconductance ¹	g_{fs}	$V_{DS} = -10V, I_D = -2.5A$		17		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = -10V, f = 1MHz$		1275		pF
Output Capacitance	C_{oss}			179		
Reverse Transfer Capacitance	C_{rss}			161		
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		9.5		Ω
Total Gate Charge ²	Q_g	$V_{DS} = -10V, V_{DS} = -10V, I_D = -2.5A$		33		nC
Gate-Source Charge ²	Q_{gs}			1.5		
Gate-Drain Charge ²	Q_{gd}			4.7		
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DD} = -10V$ $I_D \cong -2.5A, V_{GEN} = -10V, R_G = 6\Omega$		10		nS
Rise Time ²	t_r			24		
Turn-Off Delay Time ²	$t_{d(off)}$			60		
Fall Time ²	t_f			153		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25\text{ }^{\circ}C$)						
Continuous Current ³	I_S				-24	A
Forward Voltage ¹	V_{SD}	$I_F = -2.5A, V_{GS} = 0V$			-1.2	V
Reverse Recovery Time	t_{rr}	$I_F = -2.5A, dI_F/dt = 100A / \mu S$		13		nS
Reverse Recovery Charge	Q_{rr}			5.5		nC

¹Pulse test : Pulse Width $\leq 300\text{ }\mu\text{sec}$, Duty Cycle $\leq 2\%$.²Independent of operating temperature.³Package limitation current is -9A.

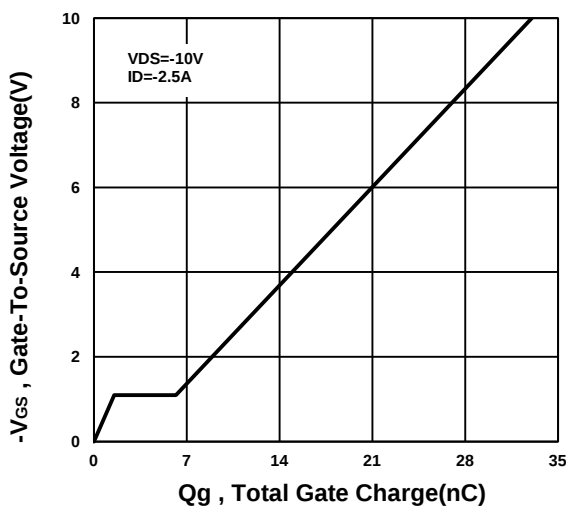
Output Characteristics



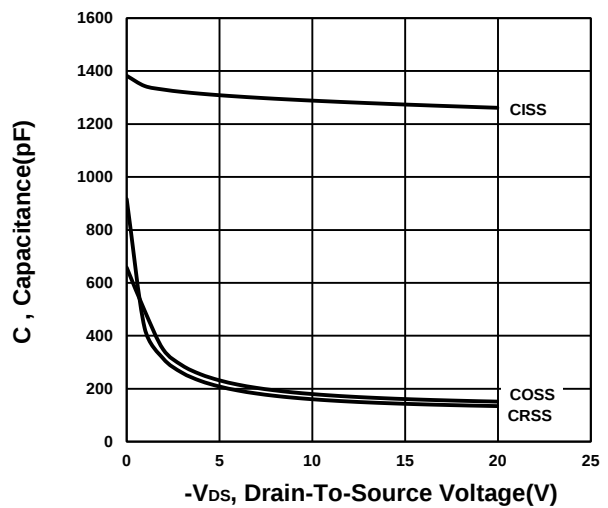
Transfer Characteristics



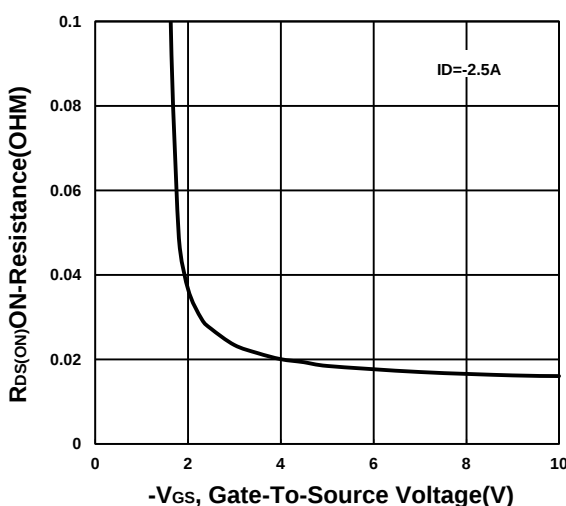
Gate charge Characteristics



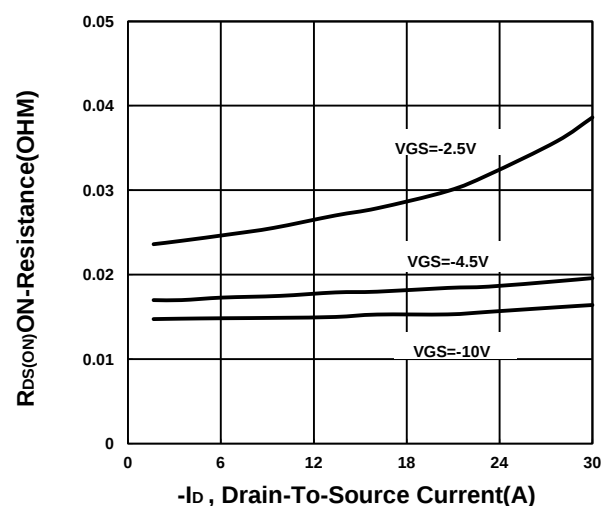
Capacitance Characteristic



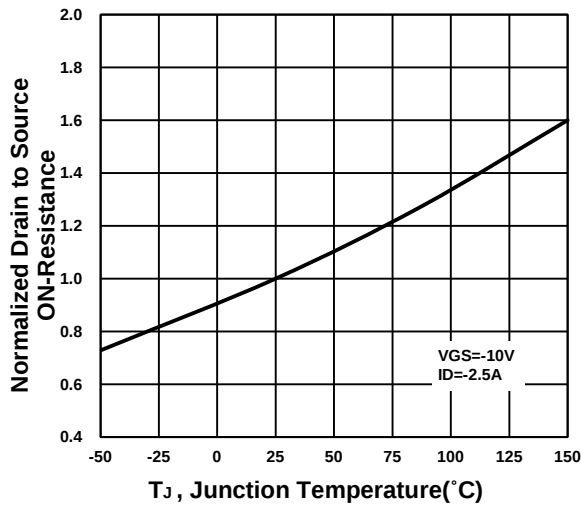
On-Resistance VS Gate-To-Source Voltage



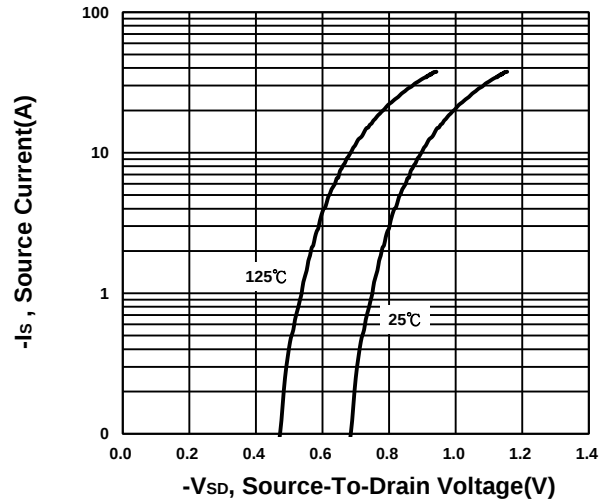
On-Resistance VS Drain Current



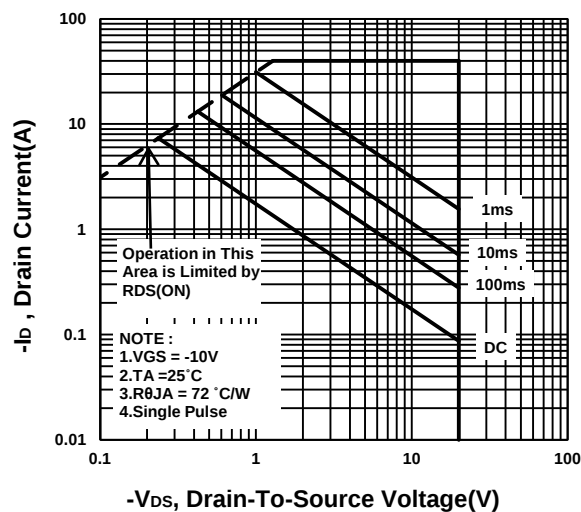
On-Resistance VS Temperature



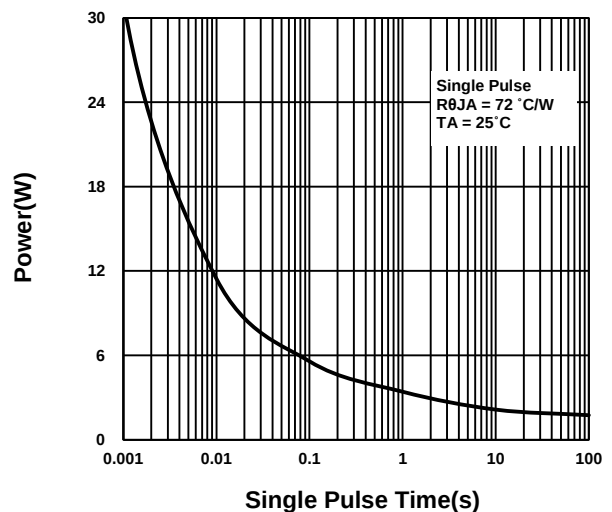
Source-Drain Diode Forward Voltage



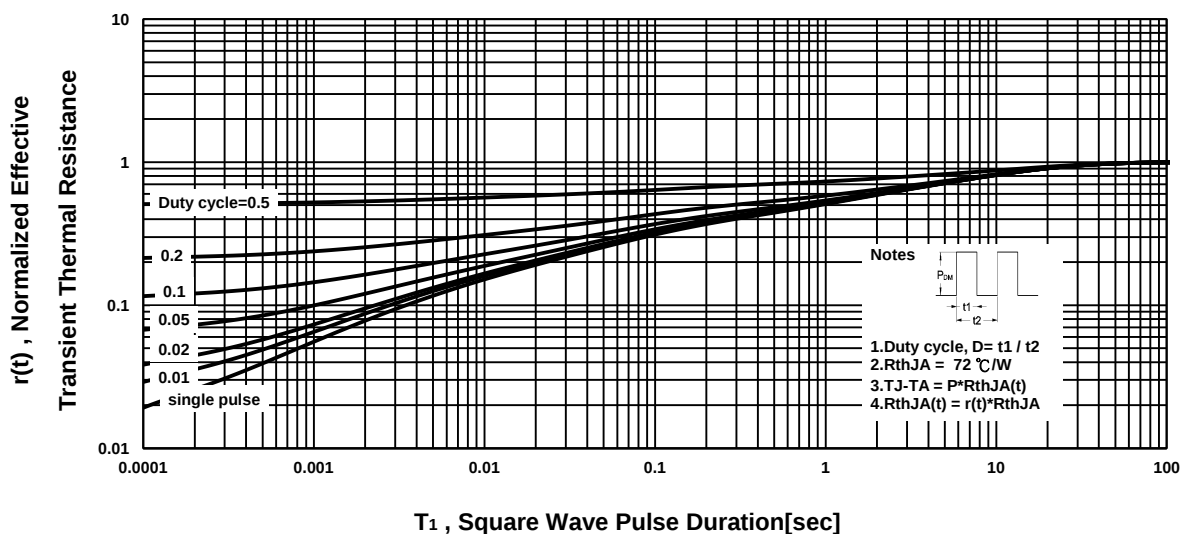
Safe Operating Area



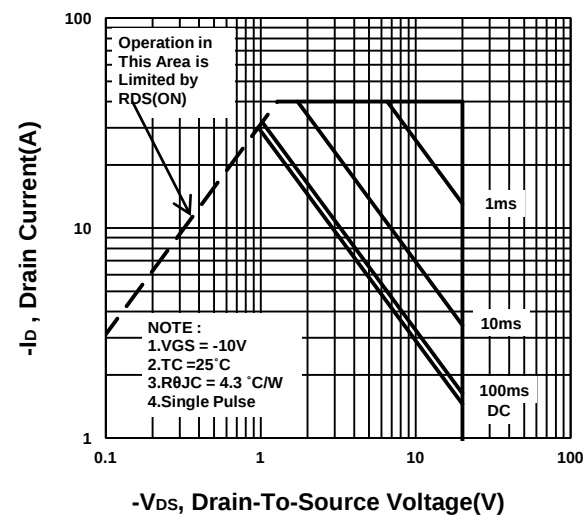
Single Pulse Maximum Power Dissipation



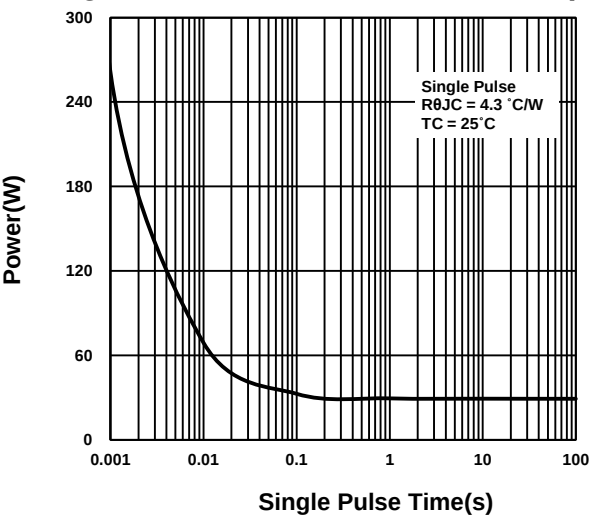
Transient Thermal Response Curve



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

