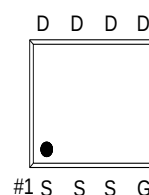
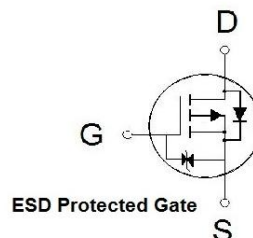


PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-40V	8.5m Ω	-50A



G. GATE
D. DRAIN
S. SOURCE

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.
- Products Integrated ESD diode with ESD Protected.

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}	-40	V
Gate-Source Voltage		V_{GS}	± 25	V
Continuous Drain Current ⁴	$T_C = 25\text{ }^{\circ}\text{C}$	I_D	-50	A
	$T_C = 100\text{ }^{\circ}\text{C}$		-38	
	$T_A = 25\text{ }^{\circ}\text{C}$		-14	
	$T_A = 70\text{ }^{\circ}\text{C}$		-11	
Pulsed Drain Current ¹		I_{DM}	-150	
Avalanche Current		I_{AS}	-53	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	140	mJ
Power Dissipation ³	$T_C = 25\text{ }^{\circ}\text{C}$	P_D	56	W
	$T_C = 100\text{ }^{\circ}\text{C}$		22	
	$T_A = 25\text{ }^{\circ}\text{C}$		3.1	
	$T_A = 70\text{ }^{\circ}\text{C}$		2	
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	$t \leq 10s$	$R_{\theta JA}$		40	°C / W
Junction-to-Ambient ²	Steady-State	$R_{\theta JA}$		58	
Junction-to-Case	Steady-State	$R_{\theta JC}$		2.2	

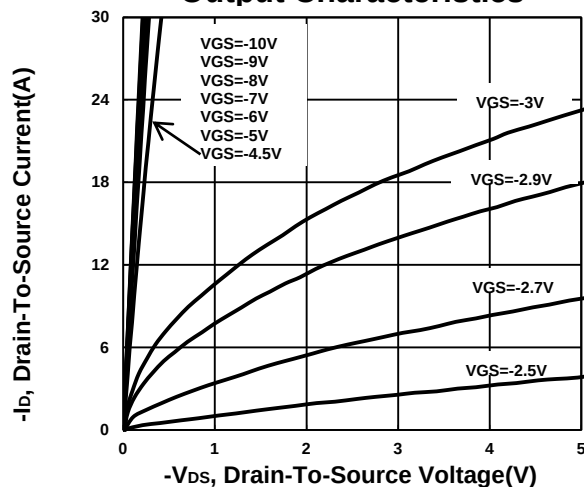
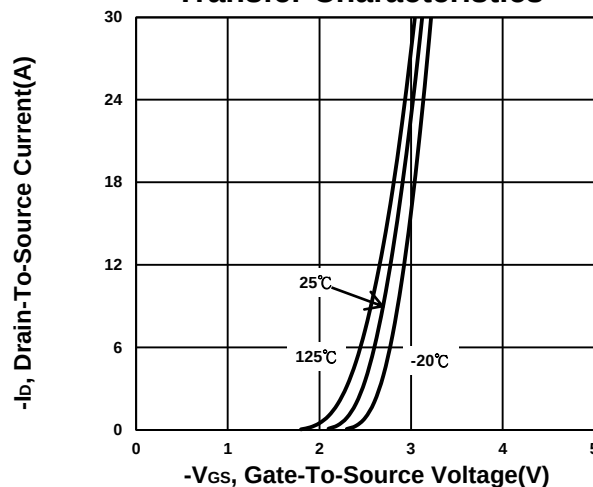
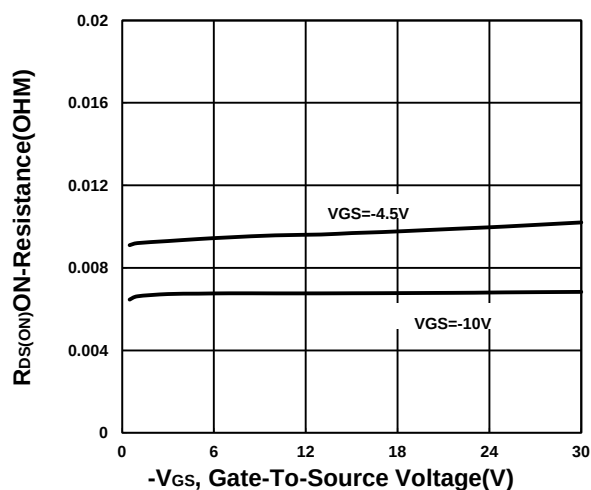
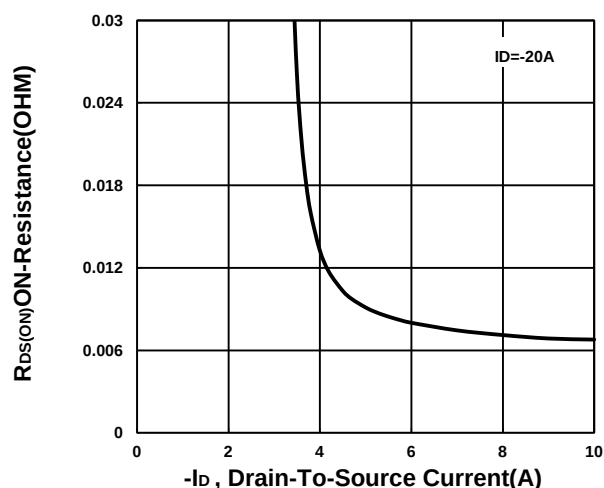
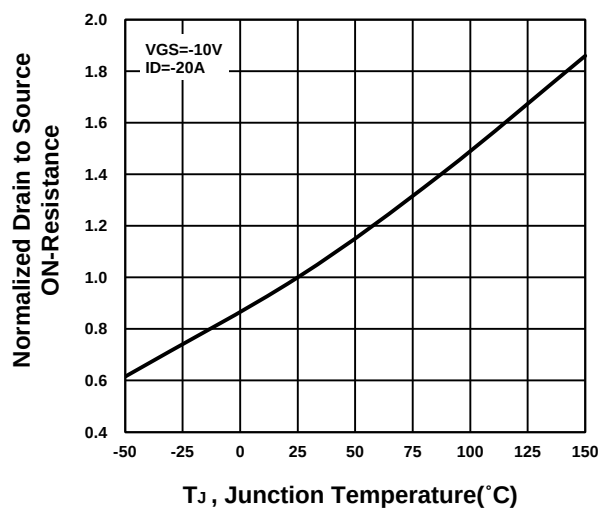
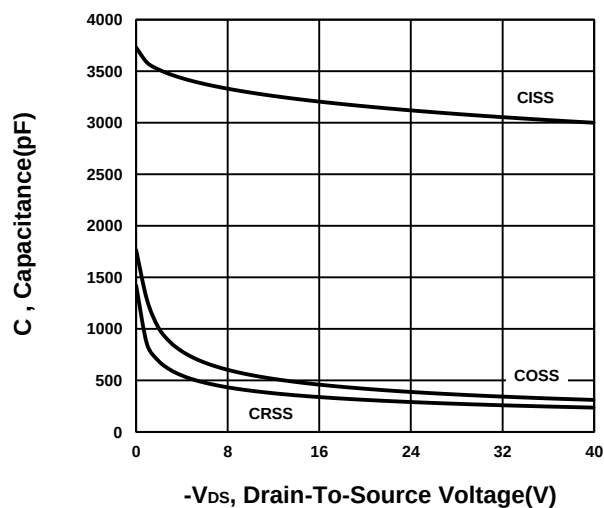
¹Pulse width limited by maximum junction temperature.²The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.³The Power dissipation is based on $R_{\theta JA}$ $t \leq 10s$ value.⁴The maximum current rating is Package limited.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	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-1.3	-1.7	-2.3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 25V$			± 10	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = -40V, V_{GS} = 0V$			-1	μA
		$V_{DS} = -40V, V_{GS} = 0V, T_J = 55^\circ C$			-10	
Drain-Source On-State Resistance ⁵	$R_{DS(ON)}$	$V_{GS} = -10V, I_D = -20A$		6.9	8.5	$m\Omega$
		$V_{GS} = -4.5V, I_D = -15A$		10	14	
Forward Transconductance ⁵	g_{fs}	$V_{DS} = -5V, I_D = -20A$		51		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = -20V, f = 1MHz$		3291		pF
Output Capacitance	C_{oss}			423		
Reverse Transfer Capacitance	C_{rss}			320		
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		4.4		Ω
Total Gate Charge ⁶	$Q_{g(VGS=-10V)}$	$V_{DS} = -20V, I_D = -20A$		68		nC
	$Q_{g(VGS=-4.5V)}$			35		
Gate-Source Charge ⁶	Q_{gs}			9.4		
Gate-Drain Charge ⁶	Q_{gd}			16		

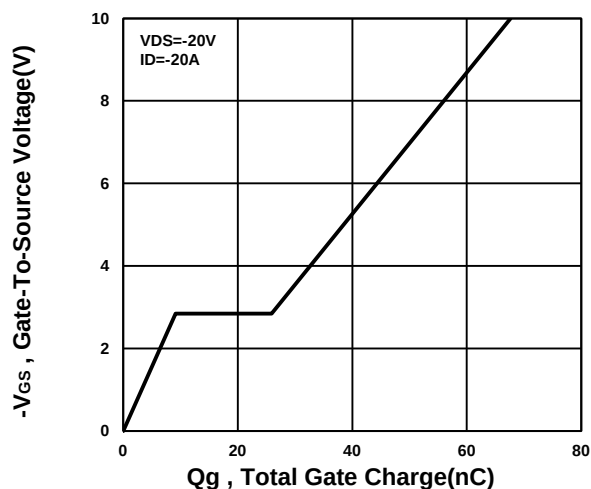
Turn-On Delay Time ⁶	t _{d(on)}	V _{DD} = -20V I _D ≅ -20A, V _{GS} = -10V, R _{GEN} = 6Ω		16		nS
Rise Time ⁶	t _r			82		
Turn-Off Delay Time ⁶	t _{d(off)}			115		
Fall Time ⁶	t _f			111		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)						
Continuous Current	I _S				-48	A
Forward Voltage ⁵	V _{SD}	I _F = -20A, V _{GS} = 0V			-1.3	V
Reverse Recovery Time	t _{rr}	I _F = -20A, dI/dt = 100A/μs		8.7		nS
Reverse Recovery Charge	Q _{rr}			1		nC

⁵Pulse test : Pulse Width $\leq 300\text{ }\mu\text{sec}$, Duty Cycle $\leq 2\%$.

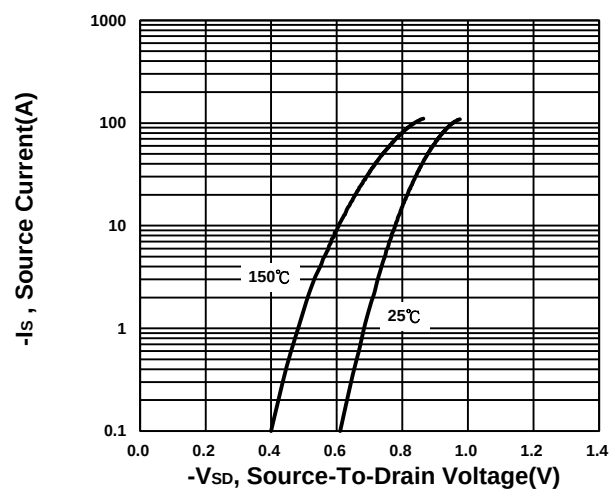
⁶Independent of operating temperature.

Output Characteristics

Transfer Characteristics

On-Resistance VS Gate-To-Source Voltage

On-Resistance VS Drain Current

On-Resistance VS Temperature

Capacitance Characteristic


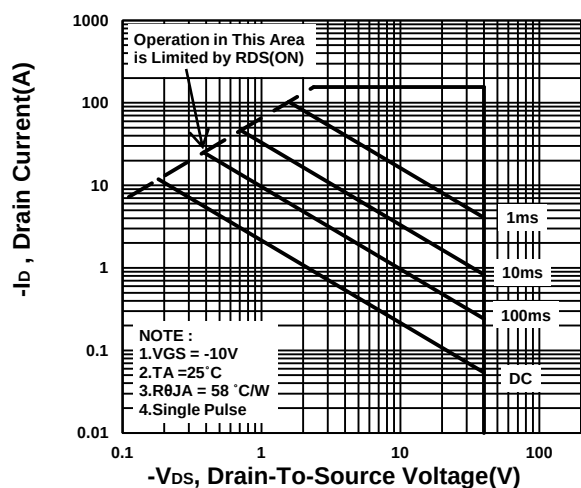
Gate charge Characteristics



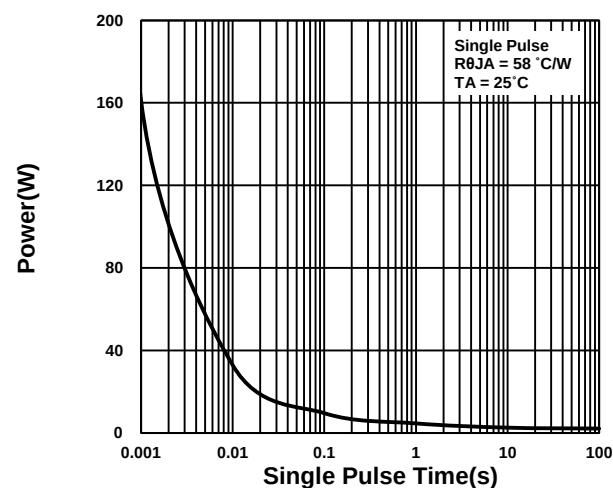
Source-Drain Diode Forward Voltage



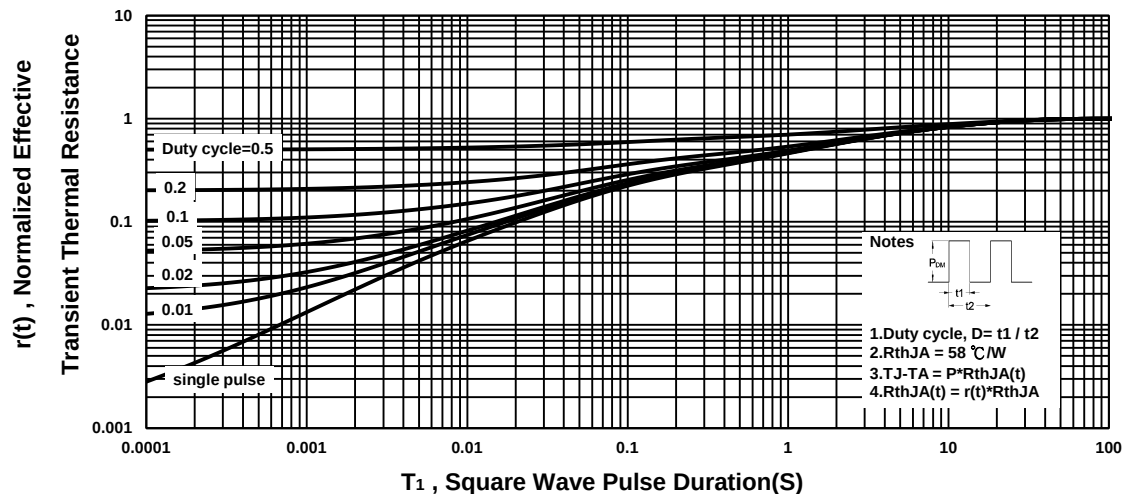
Safe Operating Area



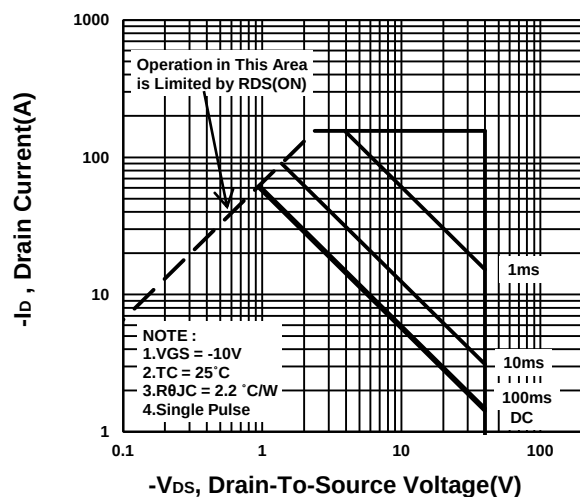
Single Pulse Maximum Power Dissipation



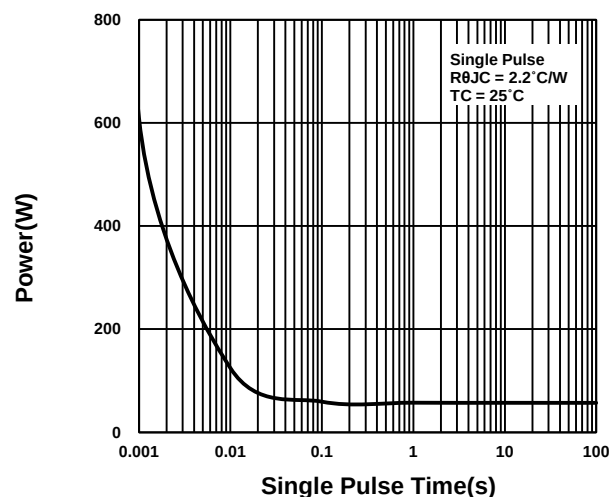
Transient Thermal Response Curve



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

