

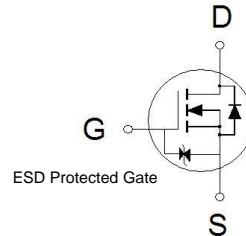


PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
24V	0.85m Ω	240A

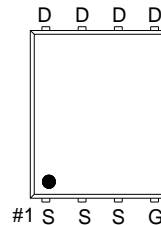
Features

- 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 ESD diode with ESD Protected.



Applications

- Protection Circuits Applications.
- Logic/Load Switch Circuits Applications.



G. GATE
D. DRAIN
S. SOURCE

100% UIS Tested
100% Rg Tested

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	24	V
Gate-Source Voltage		V_{GS}	± 12	V
Continuous Drain Current ⁴	$T_C = 25\text{ }^\circ\text{C}$	I_D	240	A
	$T_C = 100\text{ }^\circ\text{C}$		151	
Pulsed Drain Current ¹		I_{DM}	350	
Continuous Drain Current	$T_A = 25\text{ }^\circ\text{C}$	I_D	53	
	$T_A = 70\text{ }^\circ\text{C}$		42	
Avalanche Current		I_{AS}	74	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	273	mJ
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	83	W
	$T_C = 100\text{ }^\circ\text{C}$		33	
Power Dissipation ³	$T_A = 25\text{ }^\circ\text{C}$	P_D	4.1	W
	$T_A = 70\text{ }^\circ\text{C}$		2.6	
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	$t \leq 10s$	$R_{\theta JA}$		30	°C / W
Junction-to-Ambient ²	Steady-State	$R_{\theta JA}$		47	
Junction-to-Case	Steady-State	$R_{\theta JC}$		1.5	

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 $T_A = 25^\circ C$.

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 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	24			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	0.6	0.75	1.2	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 10V$			±30	μA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 20V, V_{GS} = 0V$			1	μA
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 55^\circ C$			10	
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 2.5V, I_D = 10A$		1.28	2.3	mΩ
		$V_{GS} = 4.5V, I_D = 10A$		0.81	1.3	
		$V_{GS} = 10V, I_D = 15A$		0.65	0.85	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 15A$		145		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 10V, f = 1MHz$		5875		pF
Output Capacitance	C_{oss}			1164		
Reverse Transfer Capacitance	C_{rss}			1031		
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		0.9		Ω
Total Gate Charge ²	Q_g	$V_{GS} = 10V$	$V_{DS} = 10V, V_{GS} = 10V, I_D = 15A$	168		nC
		$V_{GS} = 4.5V$		83		
Gate-Source Charge ²	Q_{gs}	5.8				
Gate-Drain Charge ²	Q_{gd}	31				
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DS} = 10V, I_D \cong 15A, V_{GS} = 10V, R_{GEN} = 6\Omega$		24		nS
Rise Time ²	t_r			114		
Turn-Off Delay Time ²	$t_{d(off)}$			295		
Fall Time ²	t_f		175			

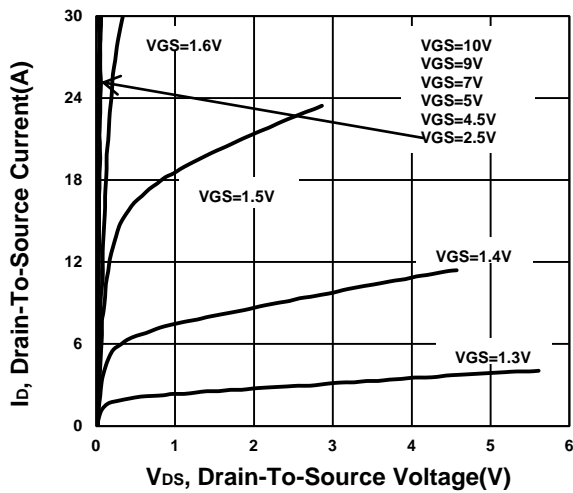
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)

Continuous Current	I _S			69	A
Forward Voltage ¹	V _{SD}	I _F = 15A, V _{GS} = 0V		1.2	V
Reverse Recovery Time	t _{rr}	I _F = 15A, di _F /dt = 100A / μS		52	nS
Reverse Recovery Charge	Q _{rr}			47	nC

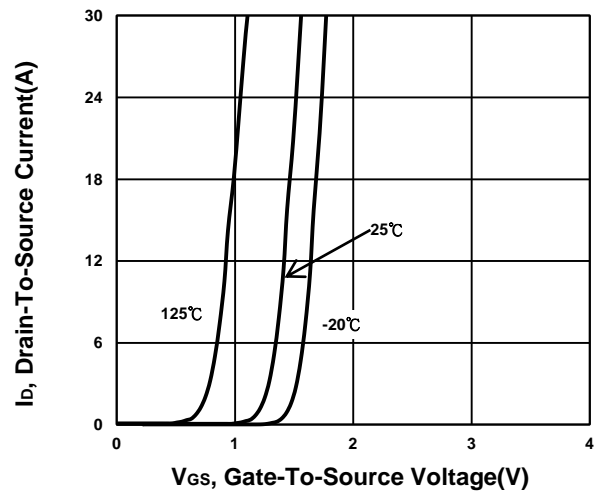
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

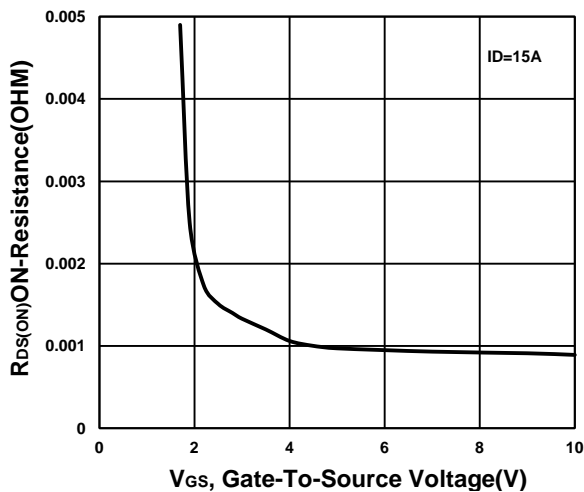
Output Characteristics



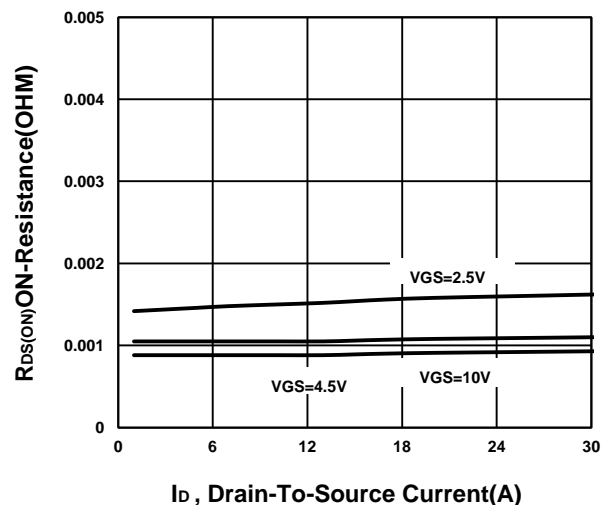
Transfer Characteristics



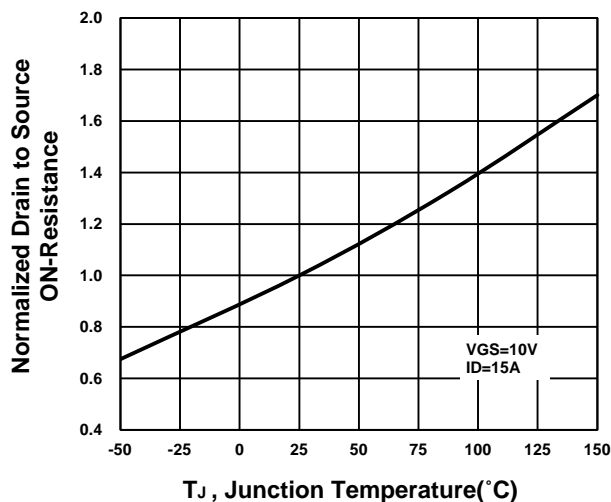
On-Resistance VS Gate-To-Source Voltage



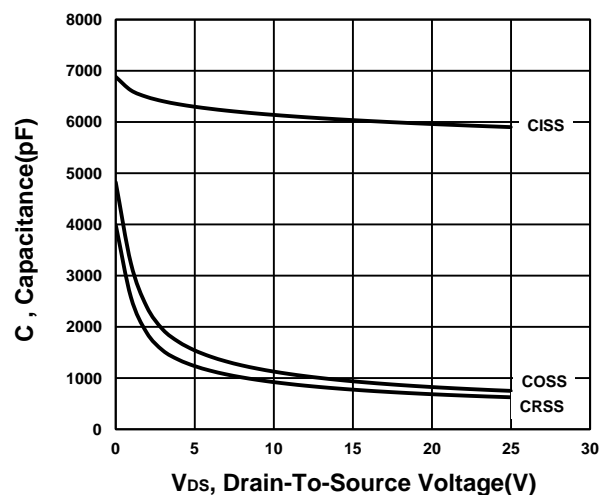
On-Resistance VS Drain Current



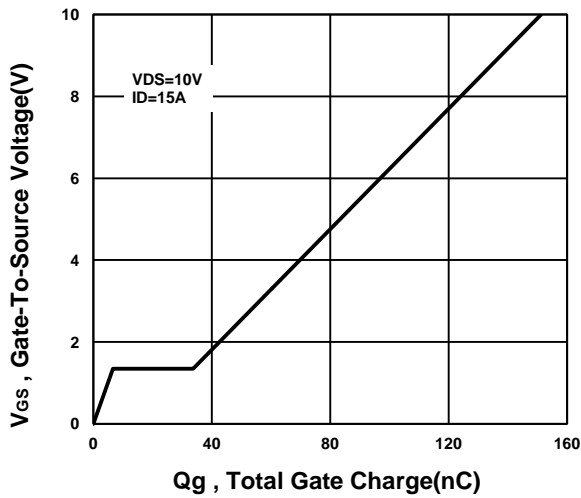
On-Resistance VS Temperature



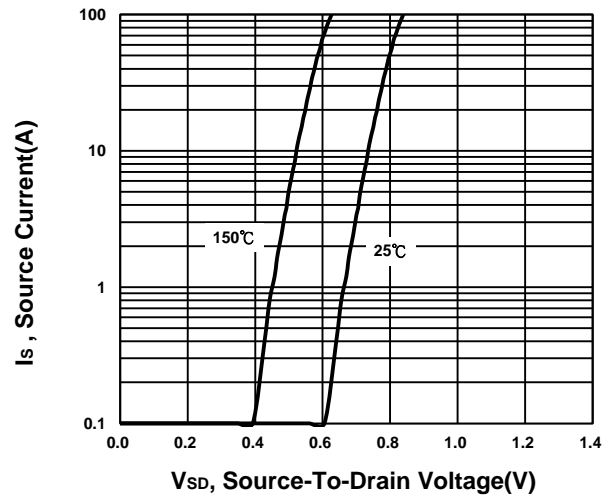
Capacitance Characteristic



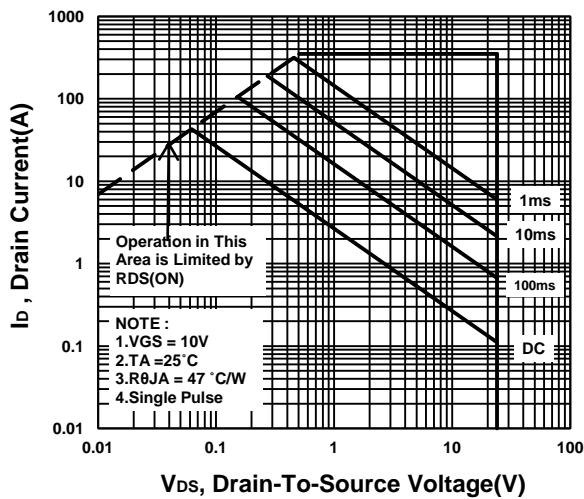
Gate charge Characteristics



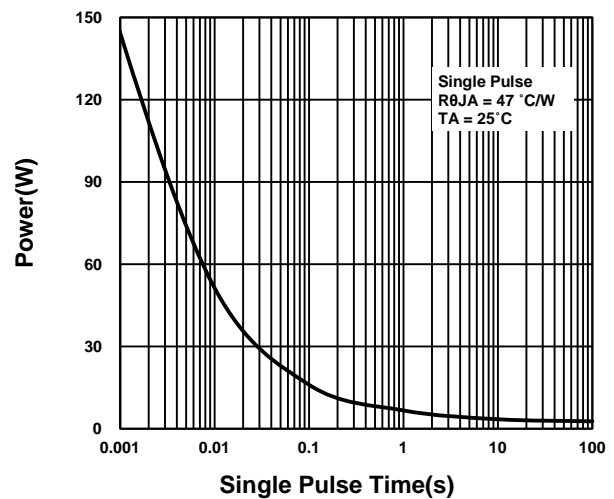
Source-Drain Diode Forward Voltage



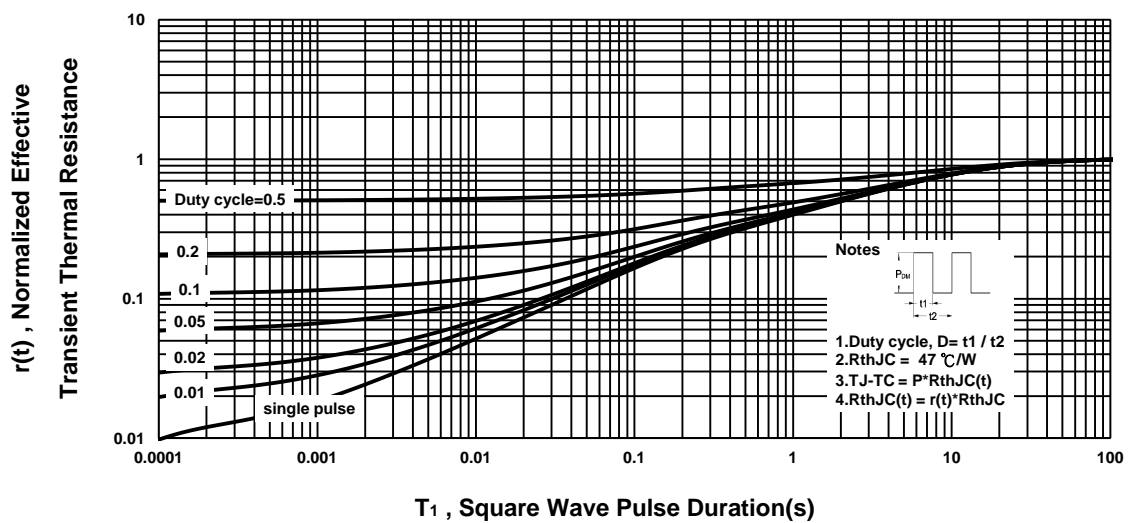
Safe Operating Area



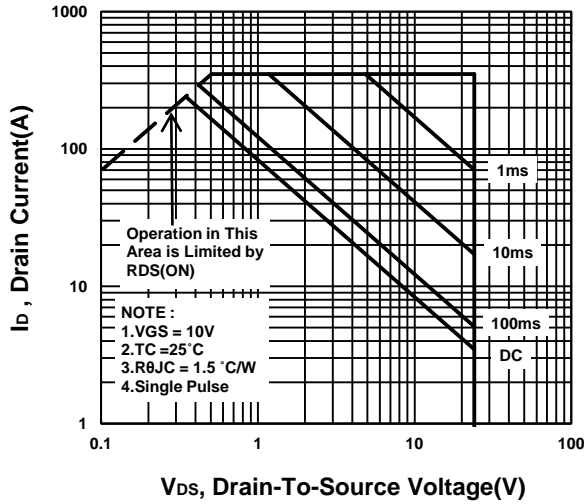
Single Pulse Maximum Power Dissipation



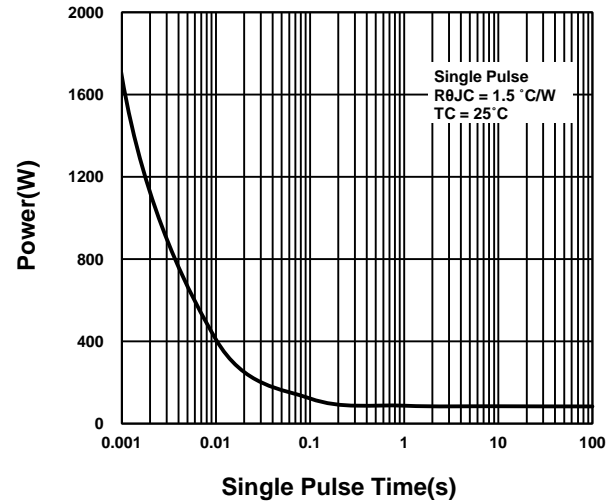
Transient Thermal Response Curve



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

