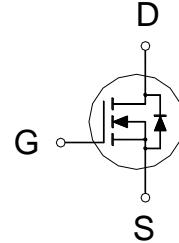




**PRODUCT SUMMARY**

$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
30V	12mΩ	10A

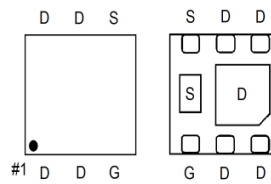


**Features**

- 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.
- Computer for DC to DC Converters Applications.



**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	$T_A = 25\text{ °C}$	$I_D$	10	A
	$T_A = 70\text{ °C}$		8.5	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	27	
Avalanche Current		$I_{AS}$	18	
Avalanche Energy	$L = 0.1\text{mH}$	$E_{AS}$	16.2	mJ
Power Dissipation <sup>3</sup>	$T_A = 25\text{ °C}$	$P_D$	2.4	W
	$T_A = 70\text{ °C}$		1.5	
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 <sup>2</sup>	$t \leq 10\text{s}$	$R_{\theta JA}$		52	°C/W
	Steady-State			71.7	

<sup>1</sup>Pulse width limited by maximum junction temperature.

<sup>2</sup>The value of  $R_{\theta JA}$  is measured with the device mounted on 1in<sup>2</sup> FR-4 board with 2oz. Coppe.

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

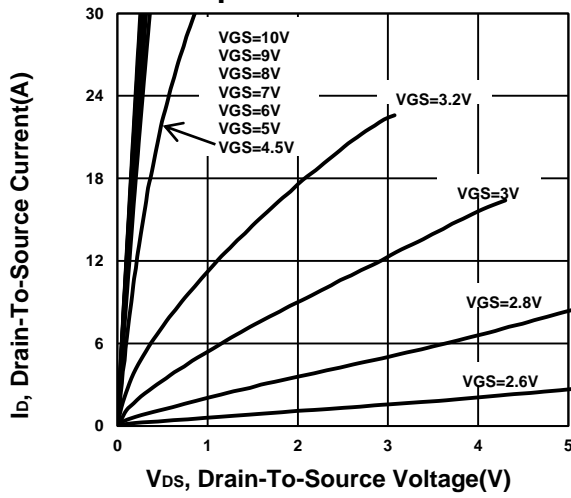
**ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25 °C, Unless Otherwise Noted)**

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
<b>STATIC</b>						
Drain-Source Breakdown Voltage	V <sub>(BR)DSS</sub>	V <sub>GS</sub> = 0V, I <sub>D</sub> = 250μA	30			V
Gate Threshold Voltage	V <sub>GS(th)</sub>	V <sub>DS</sub> = V <sub>GS</sub> , I <sub>D</sub> = 250μA	1.3	1.75	2.3	
Gate-Body Leakage	I <sub>GSS</sub>	V <sub>DS</sub> = 0V, V <sub>GS</sub> = ±20V			±100	nA
Zero Gate Voltage Drain Current	I <sub>DSS</sub>	V <sub>DS</sub> = 24V, V <sub>GS</sub> = 0V			1	μA
		V <sub>DS</sub> = 20V, V <sub>GS</sub> = 0V, T <sub>J</sub> = 55 °C			10	
Drain-Source On-State Resistance <sup>1</sup>	R <sub>DS(ON)</sub>	V <sub>GS</sub> = 4.5V, I <sub>D</sub> = 9A		12	17.5	mΩ
		V <sub>GS</sub> = 10V, I <sub>D</sub> = 9A		9	12	
Forward Transconductance <sup>1</sup>	g <sub>fs</sub>	V <sub>DS</sub> = 10V, I <sub>D</sub> = 9A		48		S
<b>DYNAMIC</b>						
Input Capacitance	C <sub>iss</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 15V, f = 1MHz		630		pF
Output Capacitance	C <sub>oss</sub>			120		
Reverse Transfer Capacitance	C <sub>rss</sub>			80		
Gate Resistance	R <sub>g</sub>	V <sub>GS</sub> = 0V, V <sub>DS</sub> = 0V, f = 1MHz		3.1		Ω
Total Gate Charge <sup>2</sup>	Q <sub>g(VGS=10V)</sub>	V <sub>DS</sub> = 15V, I <sub>D</sub> = 9A		13		nC
	Q <sub>g(VGS=4.5V)</sub>			6.6		
Gate-Source Charge <sup>2</sup>	Q <sub>gs</sub>			2.4		
Gate-Drain Charge <sup>2</sup>	Q <sub>gd</sub>			2.8		
Turn-On Delay Time <sup>2</sup>	t <sub>d(on)</sub>		V <sub>DD</sub> = 15V I <sub>D</sub> ≅ 9A, V <sub>GEN</sub> = 10V, R <sub>G</sub> = 6Ω		6.8	
Rise Time <sup>2</sup>	t <sub>r</sub>			49		
Turn-Off Delay Time <sup>2</sup>	t <sub>d(off)</sub>			21		
Fall Time <sup>2</sup>	t <sub>f</sub>			62		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>J</sub> = 25 °C)</b>						
Continuous Current	I <sub>S</sub>				1.8	A
Forward Voltage <sup>1</sup>	V <sub>SD</sub>	I <sub>F</sub> = 9A, V <sub>GS</sub> = 0V			1.3	V
Reverse Recovery Time	t <sub>rr</sub>	I <sub>F</sub> = 9A, dI <sub>F</sub> /dt = 100A / μS		7.5		nS
Reverse Recovery Charge	Q <sub>rr</sub>			2		nC

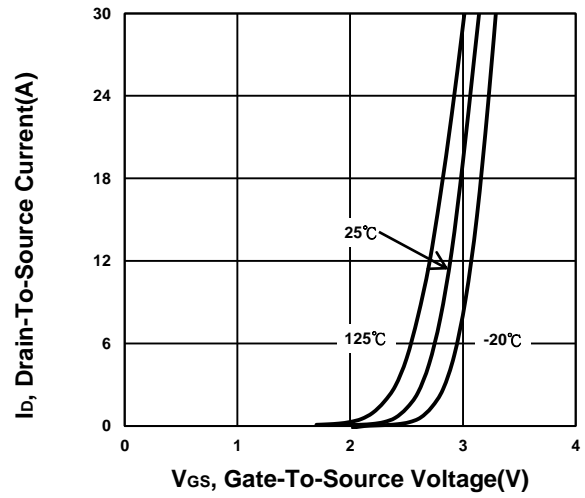
<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

<sup>2</sup>Independent of operating temperature.

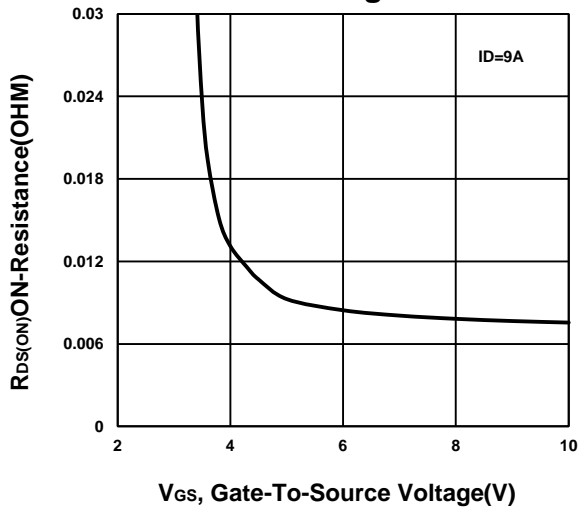
**Output Characteristics**



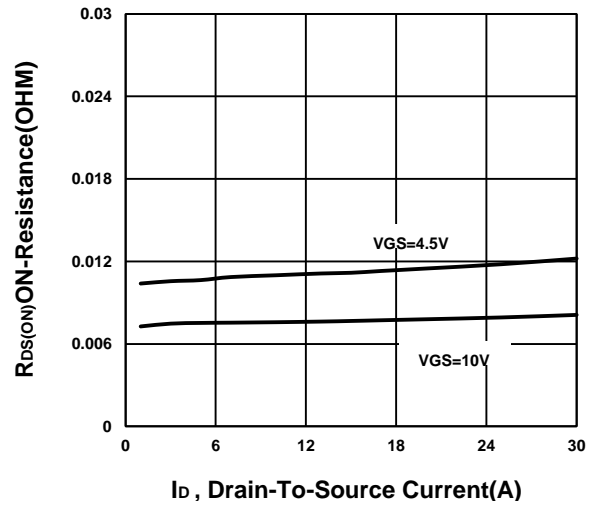
**Transfer Characteristics**



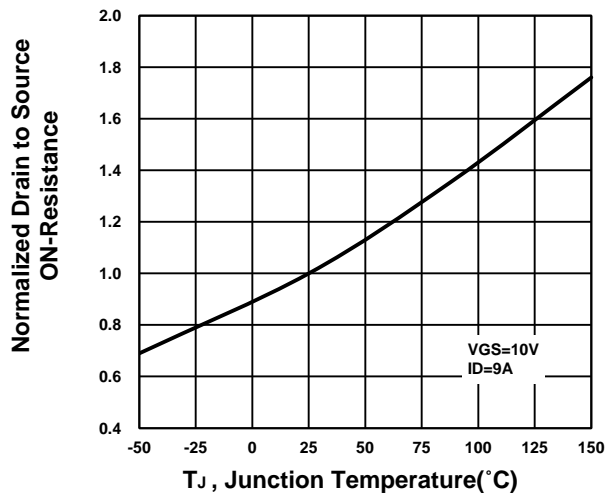
**On-Resistance VS Gate-To-Source Voltage**



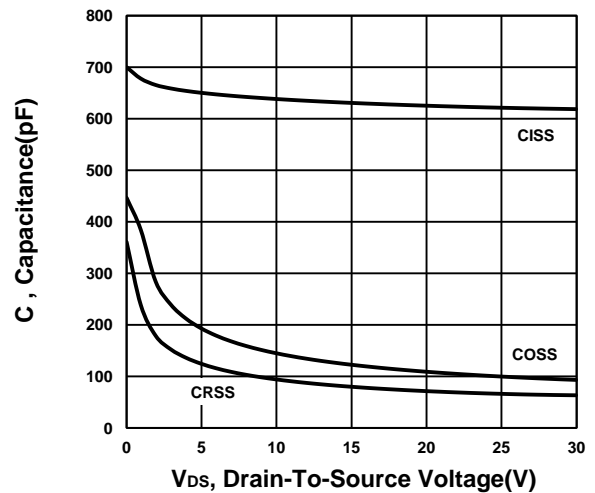
**On-Resistance VS Drain Current**



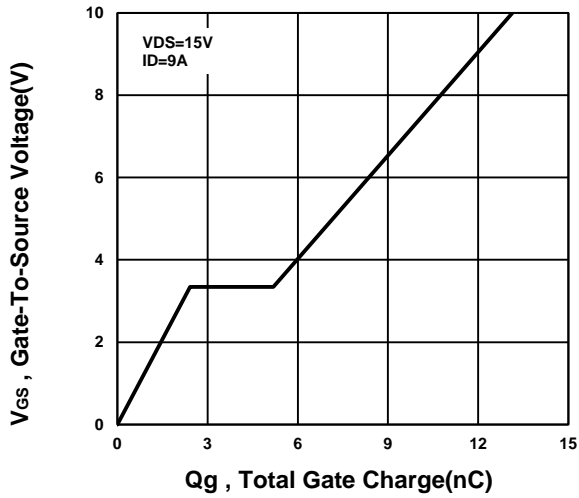
**On-Resistance VS Temperature**



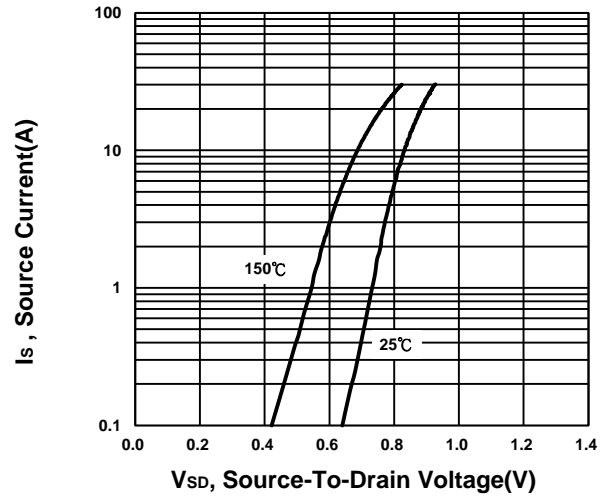
**Capacitance Characteristic**



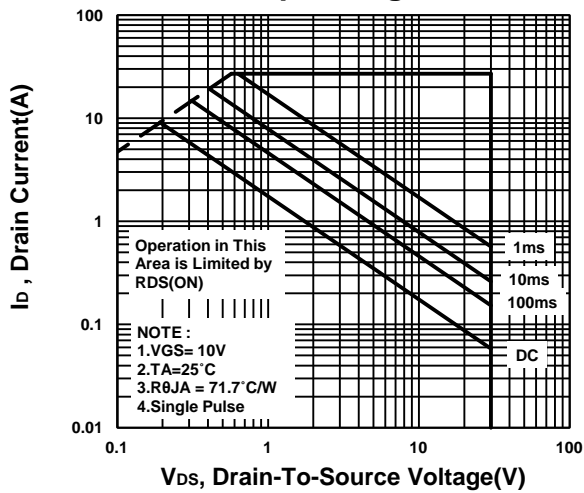
**Gate charge Characteristics**



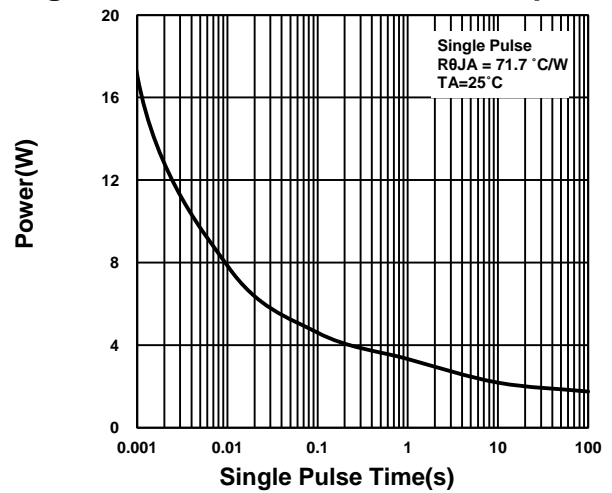
**Source-Drain Diode Forward Voltage**



**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**

