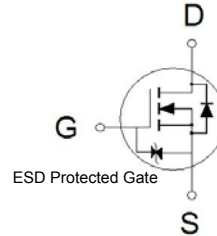




PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
20V	20mΩ	10.9A

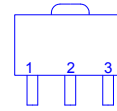


Features

- 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 up to 2KV.

Applications

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



1. GATE
2. DRAIN
3. SOURCE

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

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Gate-Source Voltage		V_{GS}	±12	V
Continuous Drain Current ⁴	$T_A = 25\text{ °C}$	I_D	10.9	A
	$T_A = 70\text{ °C}$		8.7	
Pulsed Drain Current ¹		I_{DM}	28	
Avalanche Current		I_{AS}	11.4	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	6.5	mJ
Power Dissipation ³	$T_A = 25\text{ °C}$	P_D	4.1	W
	$T_A = 70\text{ °C}$		2.6	
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 ²	$t \leq 10\text{s}$	$R_{\theta JA}$		30	°C / W
Junction-to-Ambient ²	Steady-State	$R_{\theta JA}$		54	
Junction-to-Case		$R_{\theta Jc}$		13	

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 $T_A = 25\text{ °C}$.

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

⁴Package limitation current is 5.5A.

ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

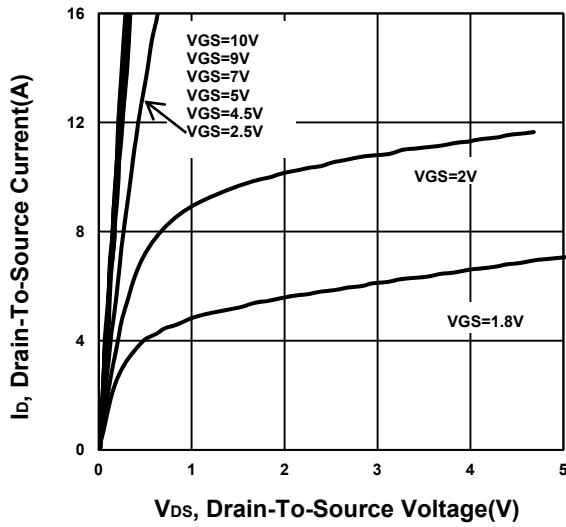
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT		
			MIN	TYP	MAX			
STATIC								
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	20			V		
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	0.5	0.96	1.5			
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±8V			±30	μA		
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 16V, V _{GS} = 0V			1	μA		
		V _{DS} = 10V, V _{GS} = 0V, T _J = 55 °C			10			
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 2.5V, I _D = 3A		30	40	mΩ		
		V _{GS} = 4.5V, I _D = 3A		20	25			
		V _{GS} = 10V, I _D = 4A		16	20			
Forward Transconductance ¹	g _{fs}	V _{DS} = 5V, I _D = 4A		2		S		
DYNAMIC								
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 10V, f = 1MHz		397		pF		
Output Capacitance	C _{oss}			89				
Reverse Transfer Capacitance	C _{rss}			73				
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		1.7		Ω		
Total Gate Charge ²	Q _{g(VGS=10V)}	V _{DS} = 10V, I _D = 4A		11.2		nC		
	Q _{g(VGS=4.5V)}			5.8				
Gate-Source Charge ²	Q _{gs}			0.7				
Gate-Drain Charge ²	Q _{gd}			2.9				
Turn-On Delay Time ²	t _{d(on)}		V _{DS} = 10V I _D ≅ 4A, V _{GS} = 10V, R _{GS} = 6Ω		15			nS
Rise Time ²	t _r				33			
Turn-Off Delay Time ²	t _{d(off)}			26				
Fall Time ²	t _f			12				
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)								
Continuous Current ³	I _S				3.1	A		
Forward Voltage ¹	V _{SD}	I _F = 4A, V _{GS} = 0V			1.3	V		
Reverse Recovery Time	t _{rr}	I _F = 4A, dI/dt = 100 A/μs		8.4		nS		
Reverse Recovery Charge	Q _{rr}				1.2		nC	

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

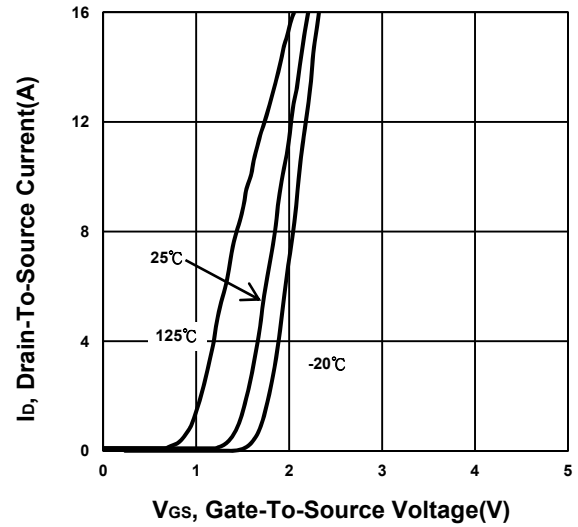
²Independent of operating temperature.

³Package limitation current is 5.5A.

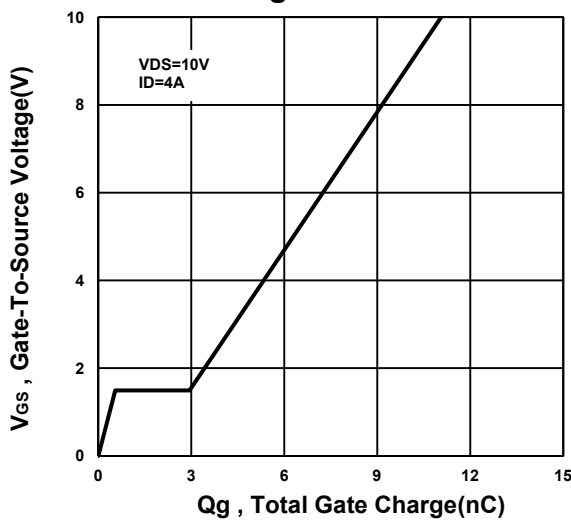
Output Characteristics



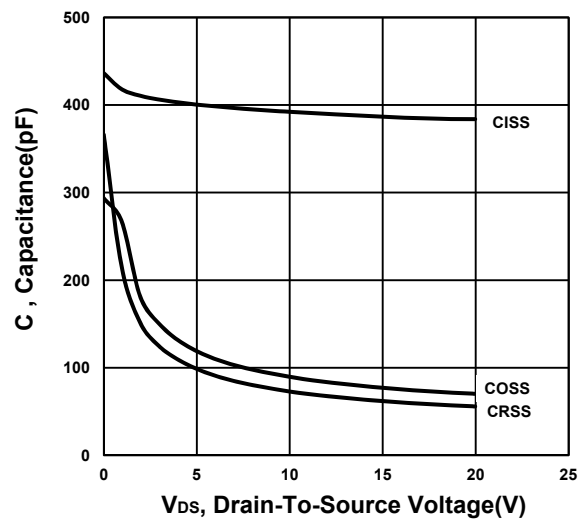
Transfer Characteristics



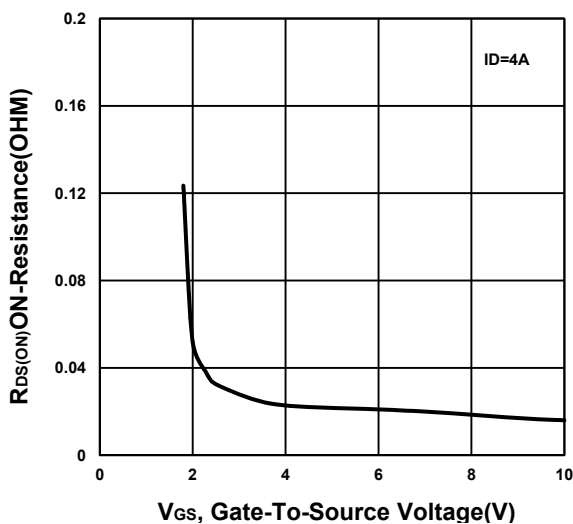
Gate charge Characteristics



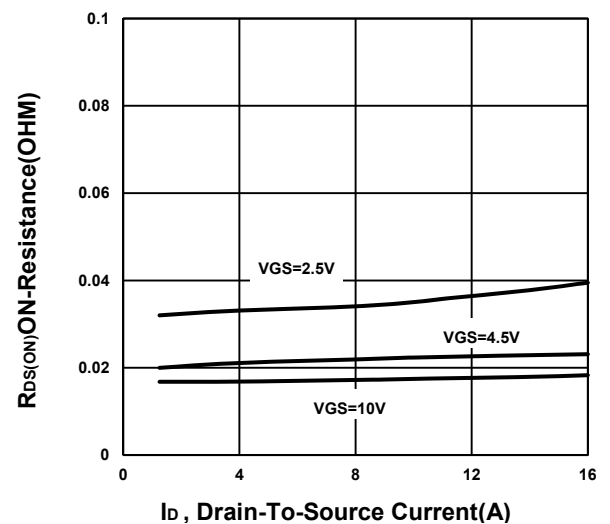
Capacitance Characteristic



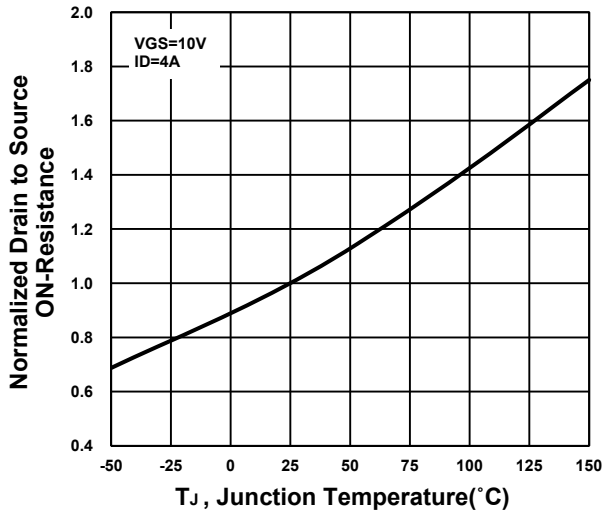
On-Resistance VS Gate-To-Source



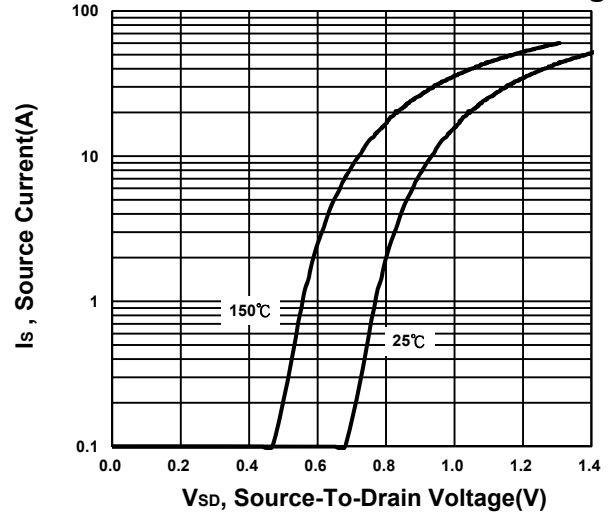
On-Resistance VS Drain Current



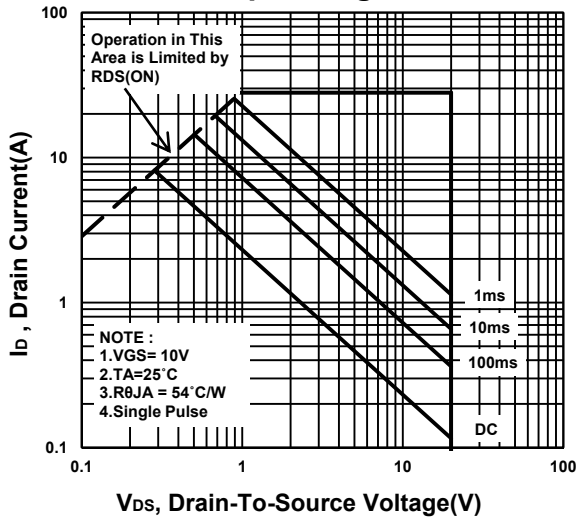
On-Resistance VS Temperature



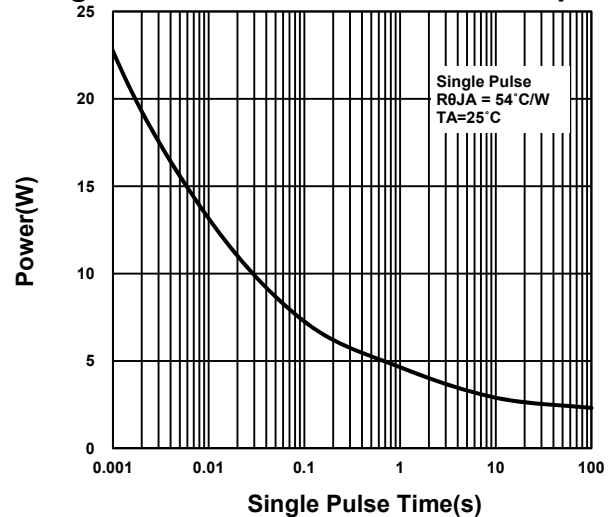
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

