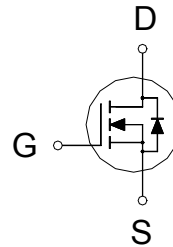


PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	6mΩ	39A

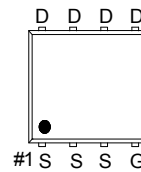


Features

- 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.



G. GATE
D. DRAIN
S. SOURCE

100% UIS Tested
100% Rg Tested

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}	±25	V
Continuous Drain Current ⁴	$T_C = 25\text{ °C}$	I_D	39	A
	$T_C = 100\text{ °C}$		25	
Pulsed Drain Current ¹		I_{DM}	100	
Continuous Drain Current ⁴	$T_A = 25\text{ °C}$	I_D	16	
	$T_A = 70\text{ °C}$		13	
Avalanche Current		I_{AS}	33	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	54	mJ
Power Dissipation	$T_C = 25\text{ °C}$	P_D	17.8	W
	$T_C = 100\text{ °C}$		7	
Power Dissipation ³	$T_A = 25\text{ °C}$	P_D	3	W
	$T_A = 70\text{ °C}$		2	
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	$t \leq 10s$	$R_{\theta JA}$		40	°C / W
Junction-to-Ambient ²	Steady-State	$R_{\theta JA}$		60	
Junction-to-Case	Steady-State	$R_{\theta JC}$		7	

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.

⁴Package limitation current is 13A.

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT	
			MIN	TYP	MAX		
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.3	1.6	2.3		
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 25V$			±100	nA	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 24V, V_{GS} = 0V$			1	μA	
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 55^\circ C$			10		
Drain-Source On-State Resistance ¹	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 8.8A$		6	9	mΩ	
		$V_{GS} = 10V, I_D = 11A$		4	6		
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 11A$		36		S	
DYNAMIC							
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$		1004		pF	
Output Capacitance	C_{oss}			324			
Reverse Transfer Capacitance	C_{rss}			190			
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		1.8		Ω	
Total Gate Charge ²	Q_g	$V_{GS} = 10V$	$V_{DS} = 15V, V_{GS} = 10V, I_D = 11A$		23	nC	
		$V_{GS} = 4.5V$			13		
Gate-Source Charge ²	Q_{gs}			2.4			
Gate-Drain Charge ²	Q_{gd}			7.9			
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DS} = 15V, I_D \cong 11A, V_{GS} = 10V, R_{GEN} = 6\Omega$			24		nS
Rise Time ²	t_r				25		
Turn-Off Delay Time ²	$t_{d(off)}$				50		
Fall Time ²	t_f			22			

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

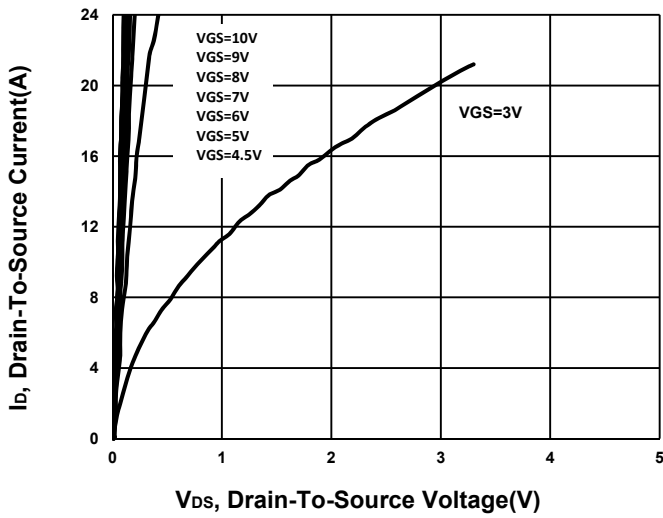
Continuous Current ³	I _S			15	A
Forward Voltage ¹	V _{SD}	I _F = 11A, V _{GS} = 0V		1.2	V
Reverse Recovery Time	t _{rr}	I _F = 11A, dI _F /dt = 100A / μS		21	nS
Reverse Recovery Charge	Q _{rr}			7.2	nC

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

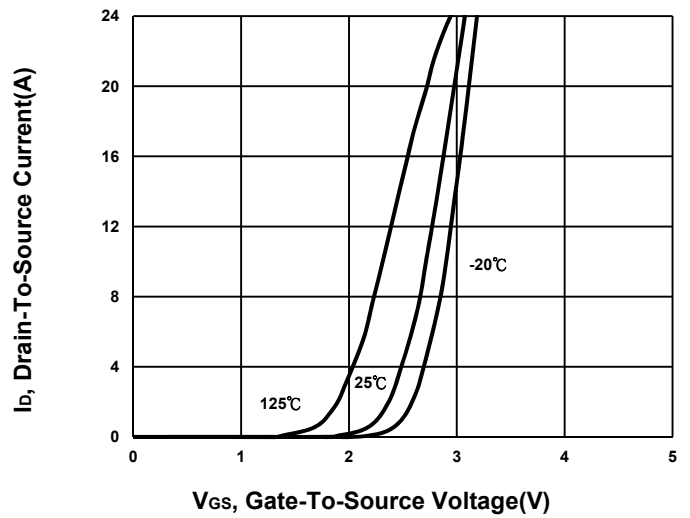
²Independent of operating temperature.

³Package limitation current is 13A.

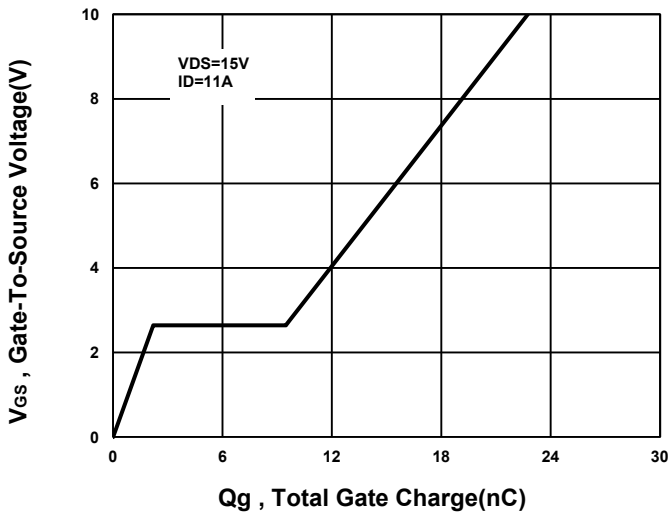
Output Characteristics



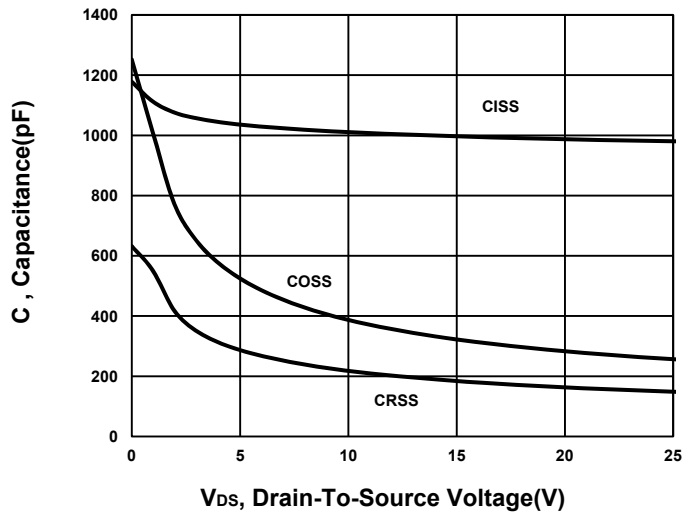
Transfer Characteristics



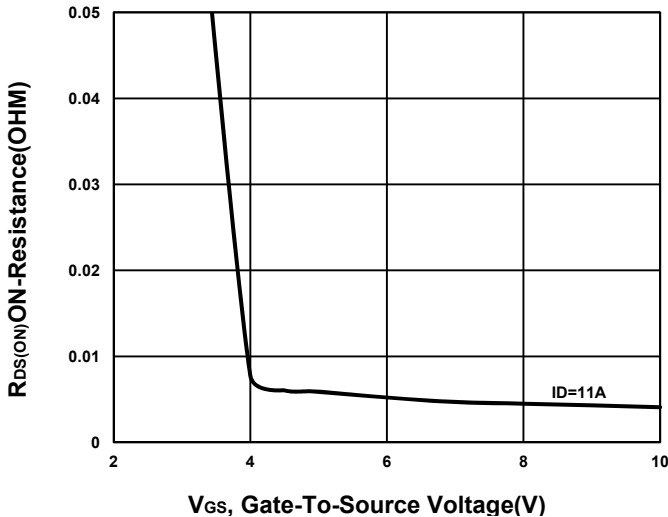
Gate charge Characteristics



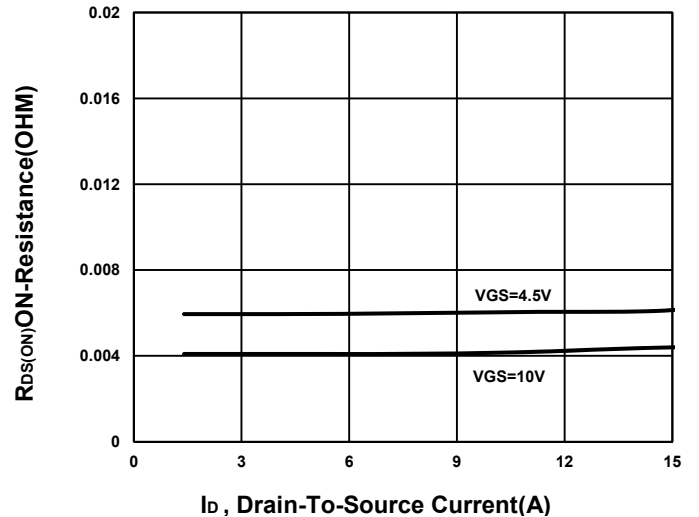
Capacitance Characteristic



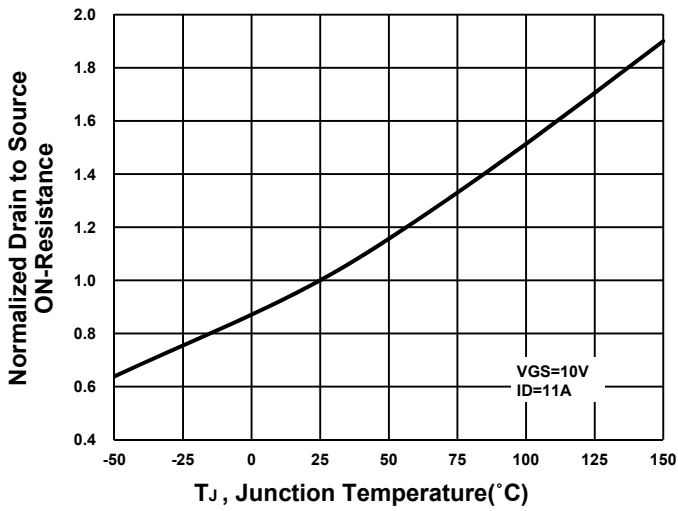
On-Resistance VS Gate-To-Source



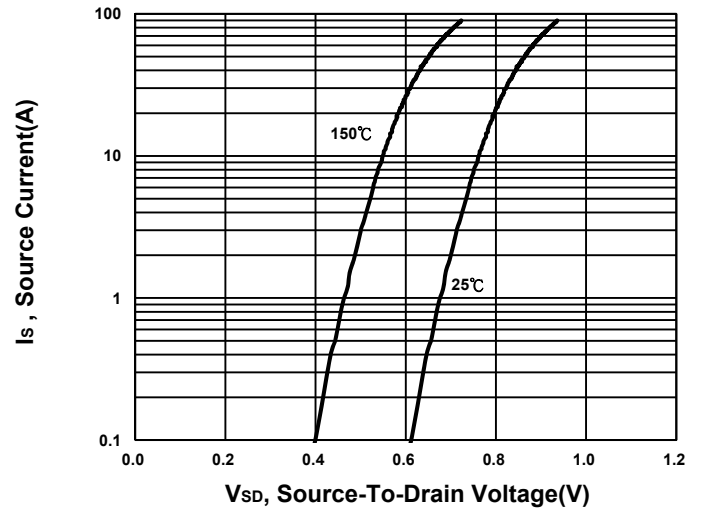
On-Resistance VS Drain Current



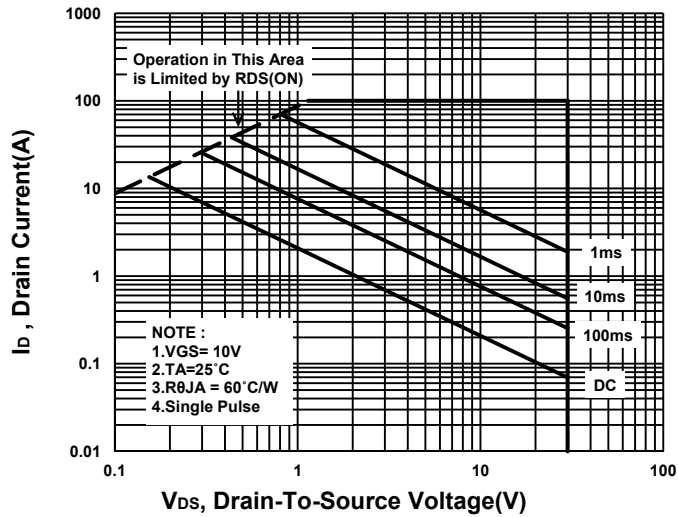
On-Resistance VS Temperature



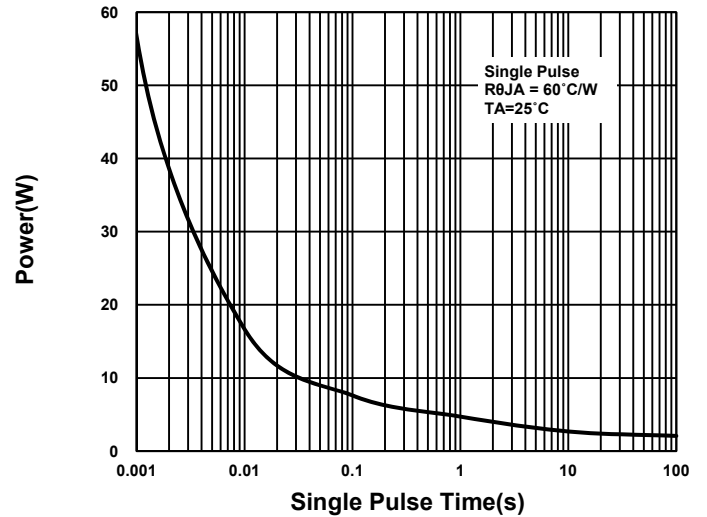
Source-Drain Diode Forward Voltage



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

