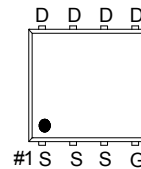
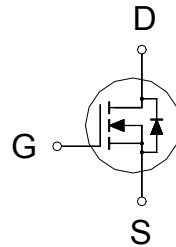




PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	9.5mΩ	31A



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.

Applications

- Protection Circuits Applications.
- Logic/Load Switch Circuits 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}	±25	V
Continuous Drain Current ³	$T_C = 25\text{ °C}$	I_D	31	A
	$T_C = 100\text{ °C}$		19	
Pulsed Drain Current ¹		I_{DM}	90	
Continuous Drain Current	$T_A = 25\text{ °C}$	I_D	10	
	$T_A = 70\text{ °C}$		8	
Avalanche Current		I_{AS}	22	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	24	mJ
Power Dissipation	$T_C = 25\text{ °C}$	P_D	18	W
	$T_C = 100\text{ °C}$		7	
Power Dissipation	$T_A = 25\text{ °C}$	P_D	1.7	W
	$T_A = 70\text{ °C}$		1.1	
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	Steady-State	$R_{\theta JA}$		70	°C / W
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 $T_A = 25^\circ\text{C}$.

³Package limitation current is 27A.

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	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.3	2	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	
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 55^\circ\text{C}$			10		
Drain-Source On-State Resistance ¹	$R_{DS(on)}$	$V_{GS} = 4.5V, I_D = 8.8A$		14.3	17	mΩ	
		$V_{GS} = 10V, I_D = 10A$		7.5	9.5		
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 10A$		28		S	
DYNAMIC							
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1\text{MHz}$		530		pF	
Output Capacitance	C_{oss}			160			
Reverse Transfer Capacitance	C_{rss}			90			
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1\text{MHz}$		2.7		Ω	
Total Gate Charge ²	Q_g	$V_{DS} = 15V, V_{GS} = 10V, I_D = 10A$	$V_{GS} = 10V$	12		nC	
			$V_{GS} = 4.5V$	6.7			
Gate-Source Charge ²	Q_{gs}		1.5				
Gate-Drain Charge ²	Q_{gd}		4.3				
Turn-On Delay Time ²	$t_{d(on)}$		$V_{DS} = 15V, I_D \cong 10A, V_{GS} = 10V, R_{GEN} = 6\Omega$		18		nS
Rise Time ²	t_r				16		
Turn-Off Delay Time ²	$t_{d(off)}$				35		
Fall Time ²	t_f			17			

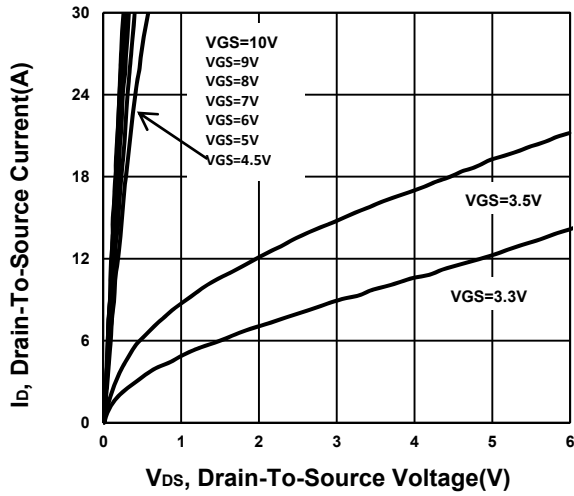
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)

Continuous Current	I _S			15	A
Forward Voltage ¹	V _{SD}	I _F = 10A, V _{GS} = 0V		1.2	V
Reverse Recovery Time	t _{rr}	I _F = 10A, dI _F /dt = 100A / μS		15	nS
Reverse Recovery Charge	Q _{rr}			5	nC

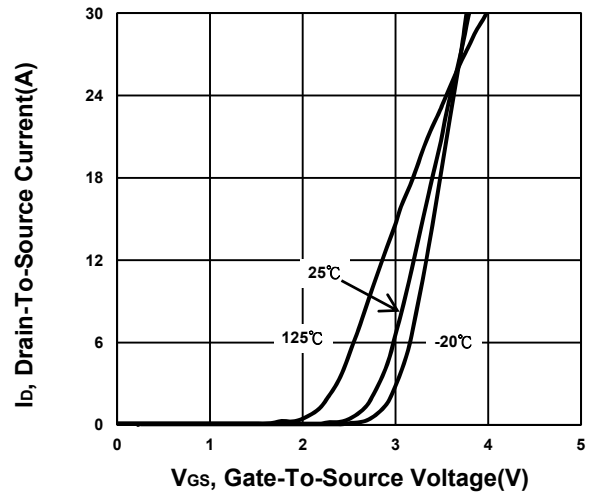
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

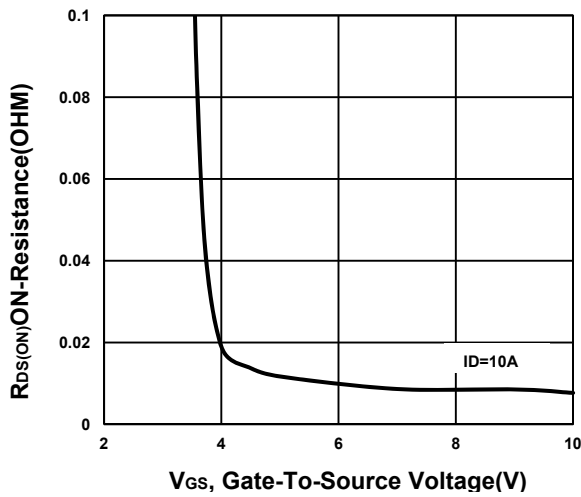
Output Characteristics



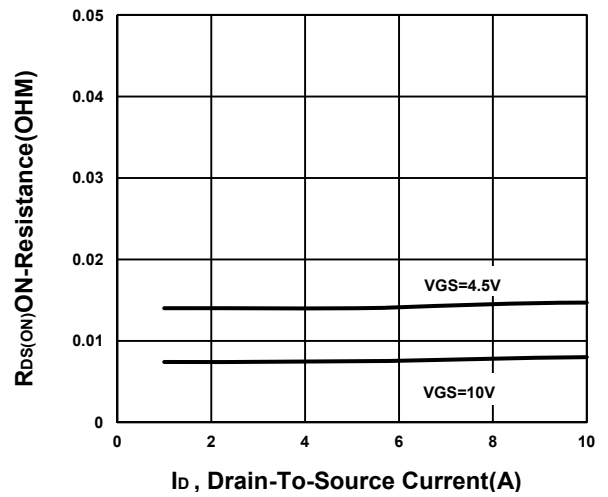
Transfer Characteristics



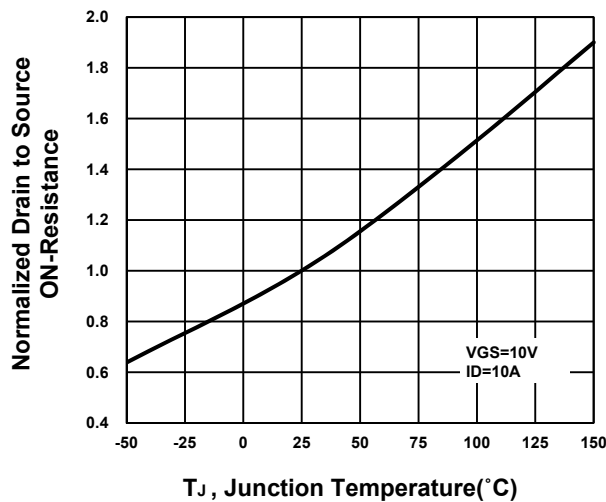
On-Resistance VS Gate-To-Source



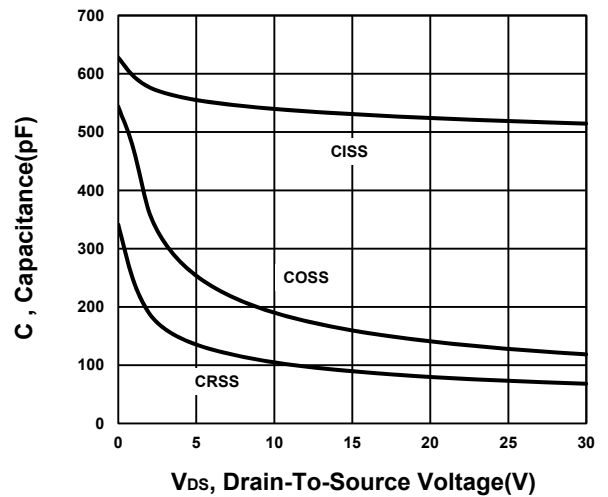
On-Resistance VS Drain Current



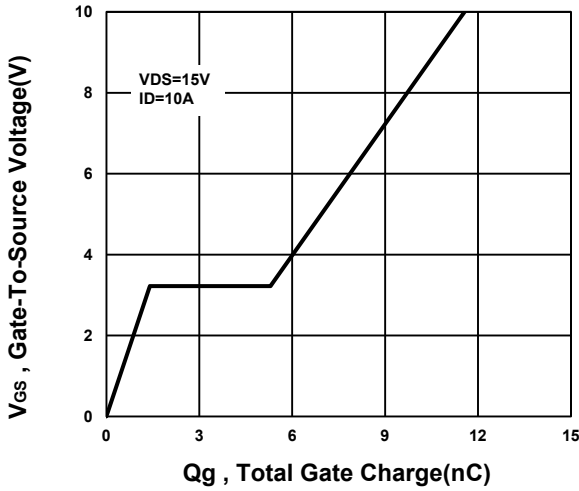
On-Resistance VS Temperature



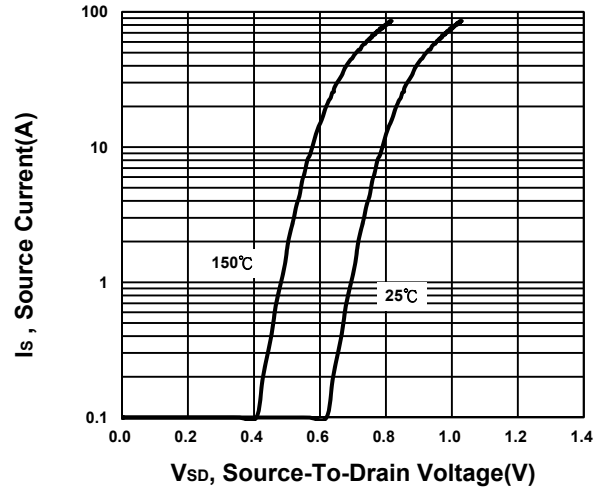
Capacitance Characteristic



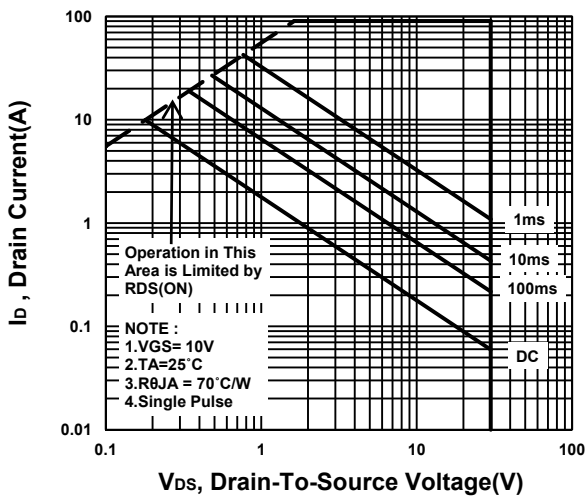
Gate charge Characteristics



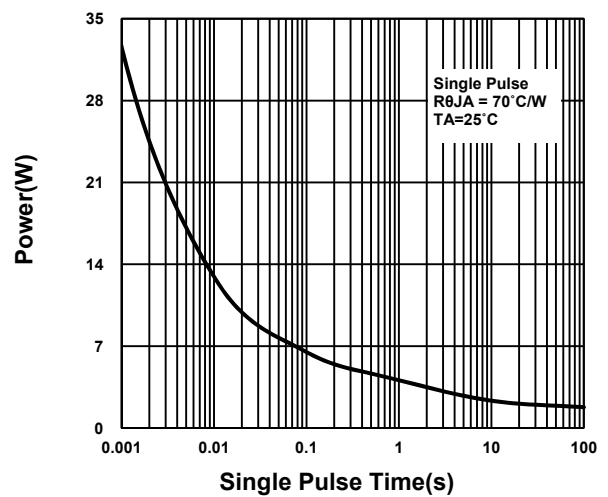
Source-Drain Diode Forward Voltage



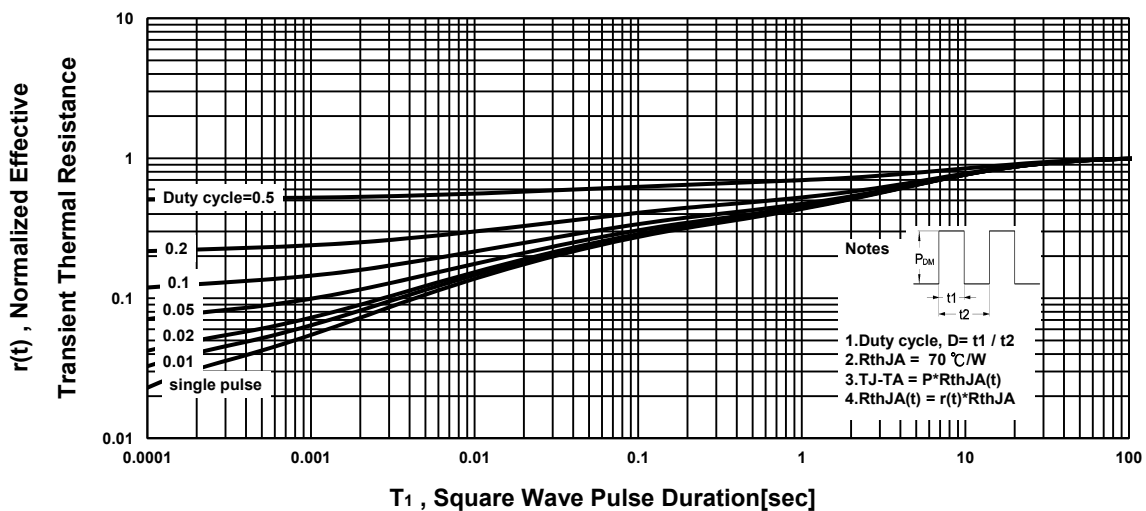
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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