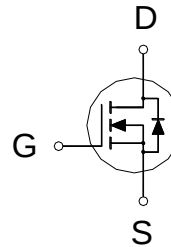


PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
40V	9m Ω	43A

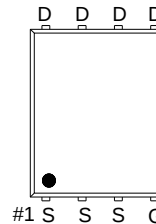


Features

- 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.
- Computer for DC to DC Converters 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}	40	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ⁴	$T_C = 25\text{ }^{\circ}\text{C}$	I_D	43	A
	$T_C = 100\text{ }^{\circ}\text{C}$		27	
Pulsed Drain Current ¹		I_{DM}	79	
Continuous Drain Current	$T_A = 25\text{ }^{\circ}\text{C}$	I_D	13	
	$T_A = 70\text{ }^{\circ}\text{C}$		11	
Avalanche Current		I_{AS}	40	
Avalanche Energy	$L = 0.01\text{mH}$	E_{AS}	8	mJ
Power Dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	P_D	31	W
	$T_C = 100\text{ }^{\circ}\text{C}$		13	
Power Dissipation ³	$T_A = 25\text{ }^{\circ}\text{C}$	P_D	3	W
	$T_A = 70\text{ }^{\circ}\text{C}$		1.9	
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	$t \leq 10s$	$R_{\theta JA}$		42	°C / W
Junction-to-Ambient ²	Steady-State	$R_{\theta JA}$		65	
Junction-to-Case	Steady-State	$R_{\theta JC}$		4	

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 $T_A = 25^\circ\text{C}$.

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

⁴The maximum current rating is package limited.

ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT	
			MIN	TYP	MAX		
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40			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}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 40V, V_{GS} = 0V$			1	μA	
		$V_{DS} = 40V, V_{GS} = 0V, T_J = 55\text{ }^{\circ}C$			10		
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 13A$		11	13.5	m Ω	
		$V_{GS} = 10V, I_D = 13A$		7.3	9		
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 13A$		47		S	
DYNAMIC							
Input Capacitance	C_{iss}		$V_{GS} = 0V, V_{DS} = 20V, f = 1MHz$		634		pF
Output Capacitance	C_{oss}				153		
Reverse Transfer Capacitance	C_{rss}				12		
Gate Resistance	R_g		$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		2.2		Ω
Total Gate Charge ²	Q_g	$V_{GS} = 10V$	$V_{DS} = 20V, V_{GS} = 10V, I_D = 13A$		9.5		nC
		$V_{GS} = 4.5V$			4.8		
Gate-Source Charge ²	Q_{gs}				2		
Gate-Drain Charge ²	Q_{gd}				1.8		
Turn-On Delay Time ²	$t_{d(on)}$		$V_{DS} = 20V, I_D \cong 13A, V_{GS} = 10V, R_{GEN} = 6\Omega$		8.6		nS
Rise Time ²	t_r				50		
Turn-Off Delay Time ²	$t_{d(off)}$				17		
Fall Time ²	t_f				63		

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

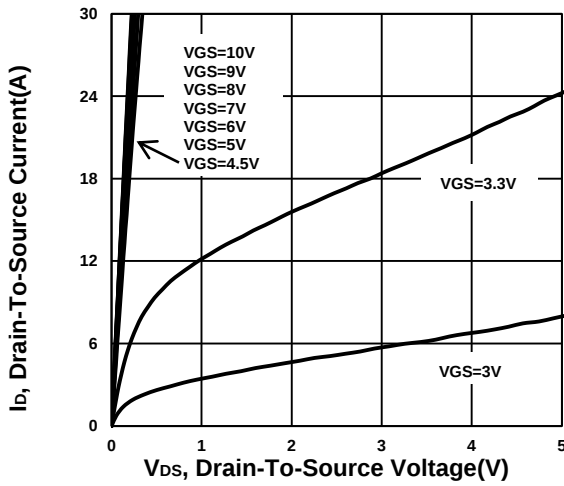
Continuous Current ³	I _S			26	A
Forward Voltage ¹	V _{SD}	I _F = 13A, V _{GS} = 0V		1.2	V
Reverse Recovery Time	t _{rr}	I _F = 13A, dI _F /dt = 400A / μS		74	nS
Reverse Recovery Charge	Q _{rr}			130	nC

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

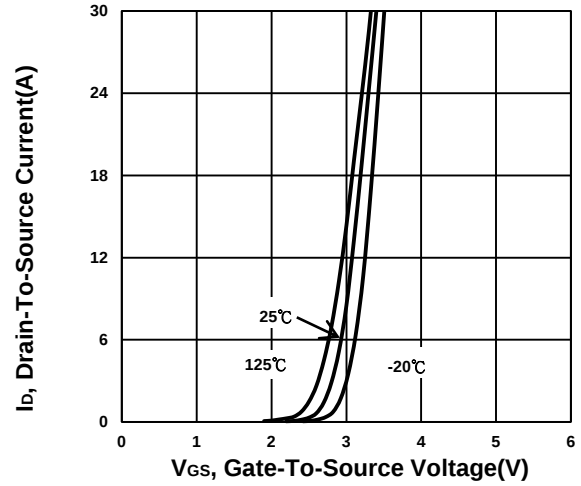
²Independent of operating temperature.

³The maximum current rating is package limited.

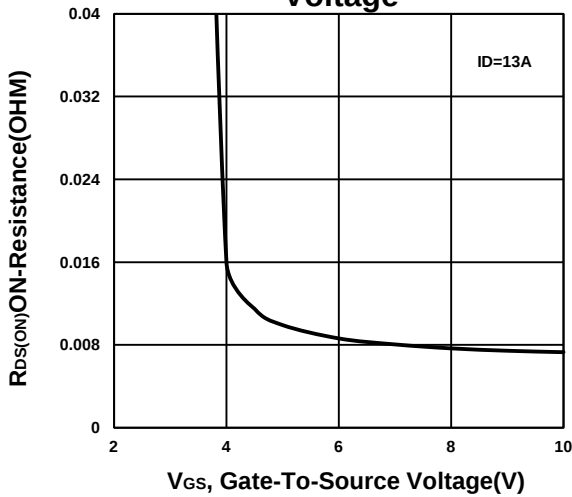
Output Characteristics



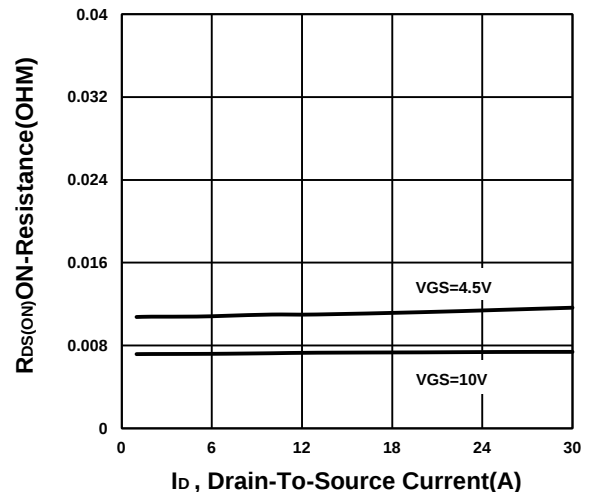
Transfer Characteristics



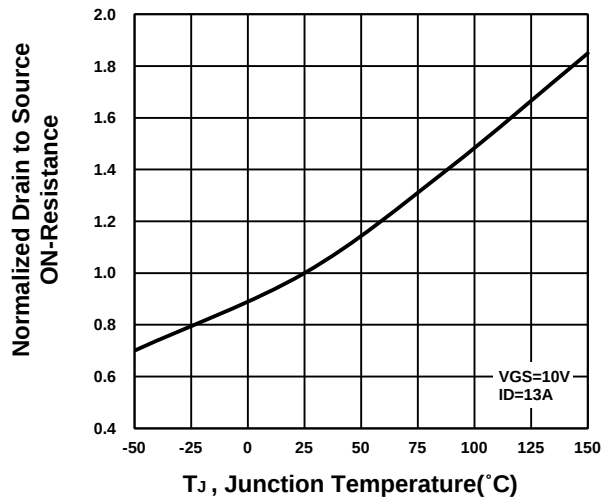
On-Resistance VS Gate-To-Source Voltage



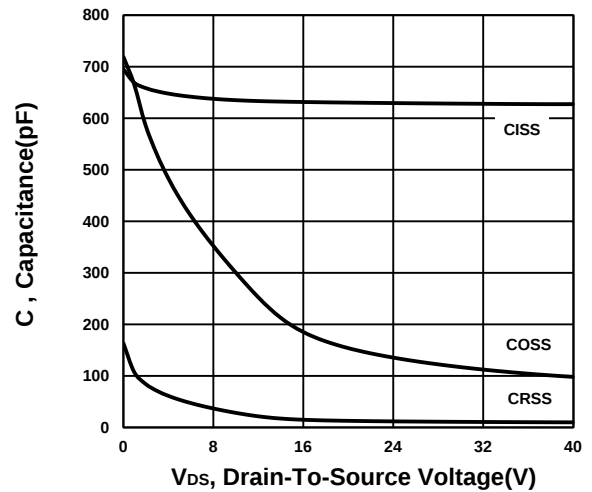
On-Resistance VS Drain Current



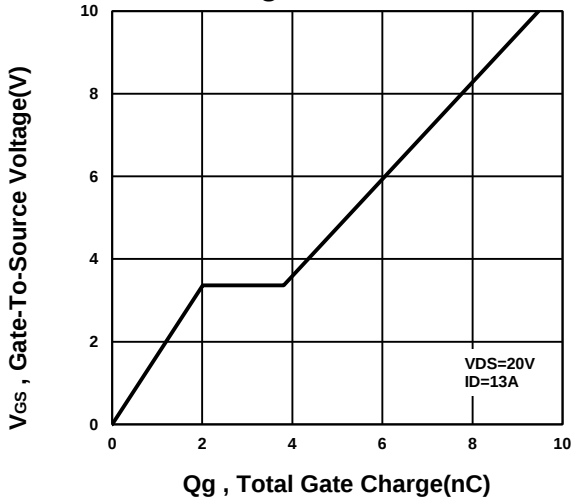
On-Resistance VS Temperature



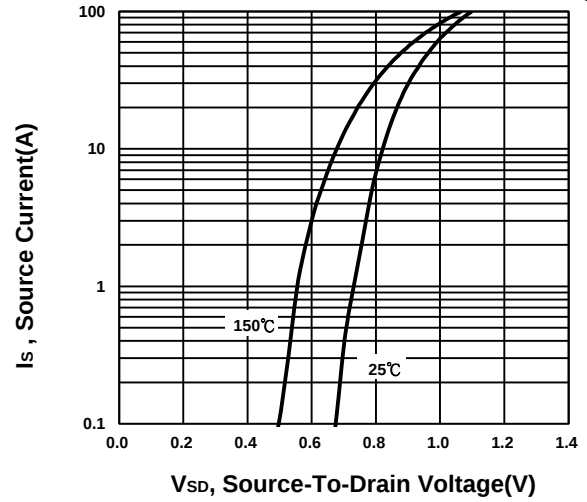
Capacitance Characteristic



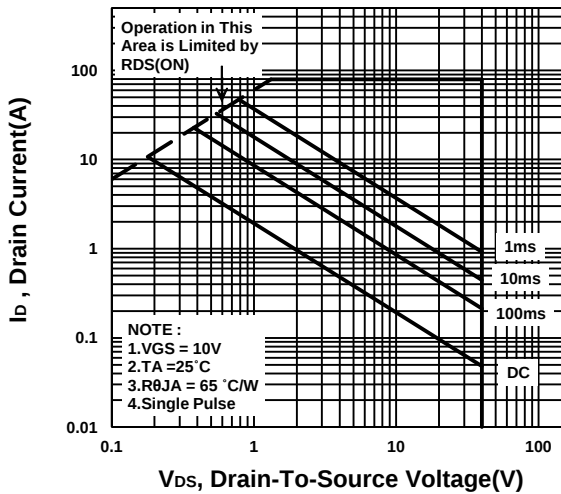
Gate charge Characteristics



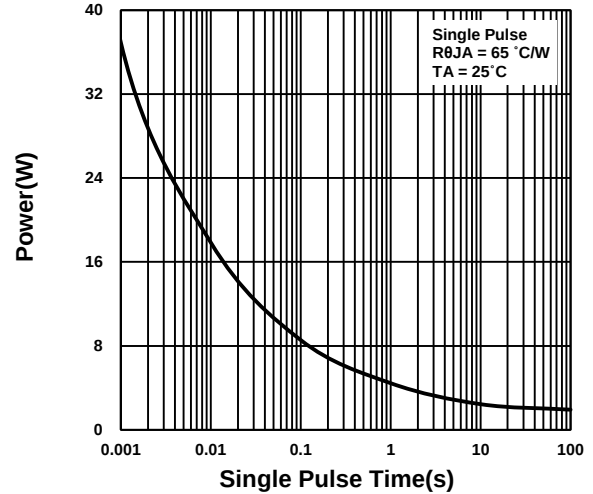
Source-Drain Diode Forward Voltage



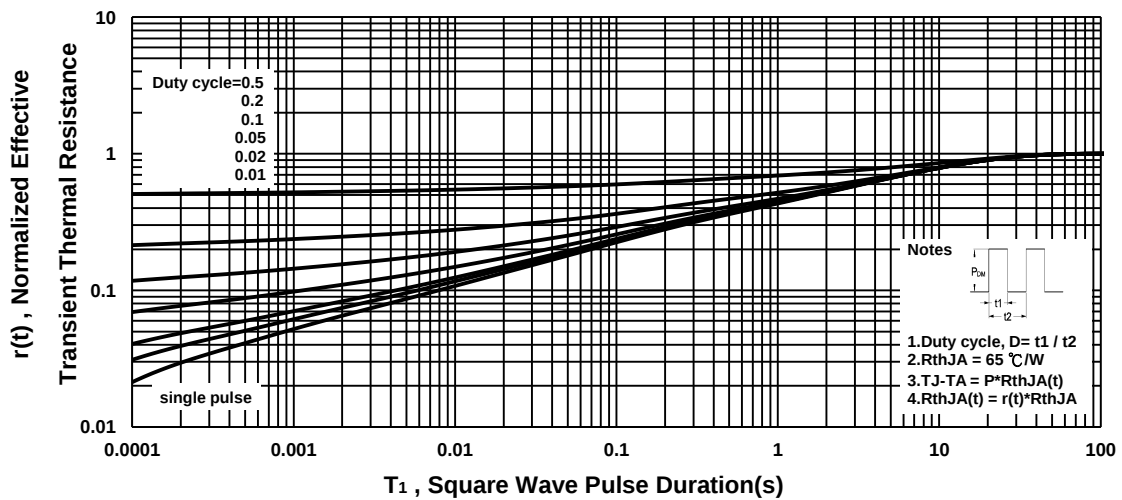
Safe Operating Area



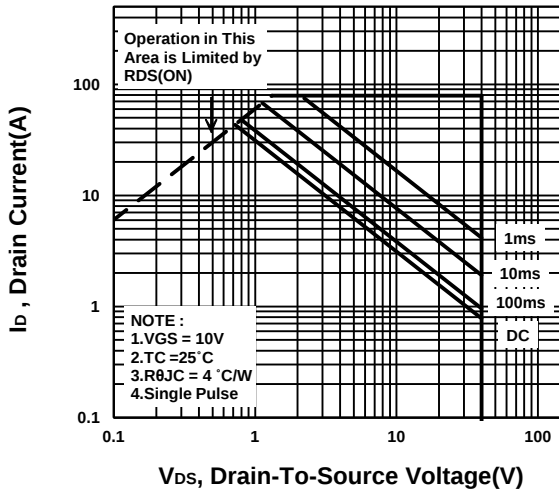
Single Pulse Maximum Power Dissipation



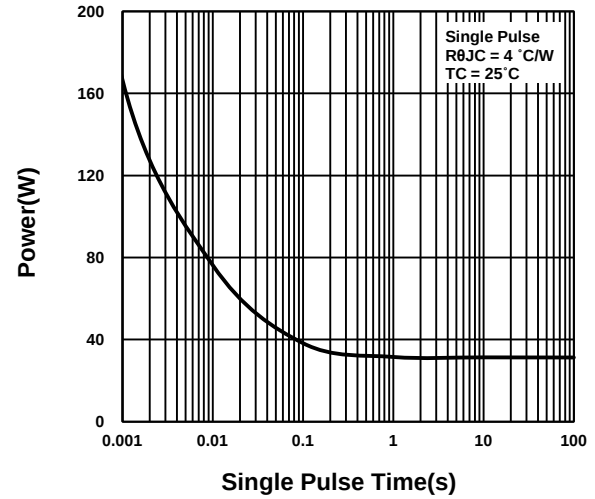
Transient Thermal Response Curve



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

