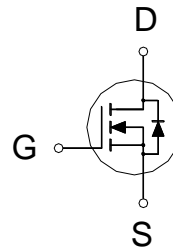


PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D^4
40V	1.5mΩ	177A

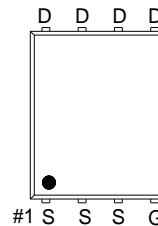


Features

- 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 ($T_A = 25\text{ °C}$ 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	$T_C = 25\text{ °C}$	I_D	177	A
	$T_C = 100\text{ °C}$		112	
Pulsed Drain Current ¹		I_{DM}	400	
Continuous Drain Current	$T_A = 25\text{ °C}$	I_D	35	
	$T_A = 70\text{ °C}$		28	
Avalanche Current		I_{AS}	71	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	252	mJ
Power Dissipation	$T_C = 25\text{ °C}$	P_D	104	W
	$T_C = 100\text{ °C}$		41	
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	$t \leq 10s$	$R_{\theta JA}$		30	°C / W
Junction-to-Ambient ²	Steady-State	$R_{\theta JA}$		47	
Junction-to-Case	Steady-State	$R_{\theta JC}$		1.2	

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.

⁴The maximum current rating is package limited.

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT	
			MIN	TYP	MAX		
STATIC							
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	40			V	
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.3	1.8	2.3	V	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			±100	nA	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 32V, V_{GS} = 0V$			1	μA	
		$V_{DS} = 30V, V_{GS} = 0V, T_J = 55^\circ C$			10		
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 16A$		1.5	2.1	mΩ	
		$V_{GS} = 10V, I_D = 20A$		1.1	1.5		
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 20A$		84		S	
DYNAMIC							
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 20V, f = 1MHz$		6072		pF	
Output Capacitance	C_{oss}			694			
Reverse Transfer Capacitance	C_{rss}			377			
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		1.6		Ω	
Total Gate Charge ²	Q_g	$V_{GS} = 10V$	$V_{DS} = 20V, V_{GS} = 10V, I_D = 20A$		109	nC	
		$V_{GS} = 4.5V$			55		
Gate-Source Charge ²	Q_{gs}			18			
Gate-Drain Charge ²	Q_{gd}			22			
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DS} = 20V, I_D \cong 20A, V_{GS} = 10V, R_{GEN} = 6\Omega$			31		nS
Rise Time ²	t_r				79		
Turn-Off Delay Time ²	$t_{d(off)}$				167		
Fall Time ²	t_f			119			

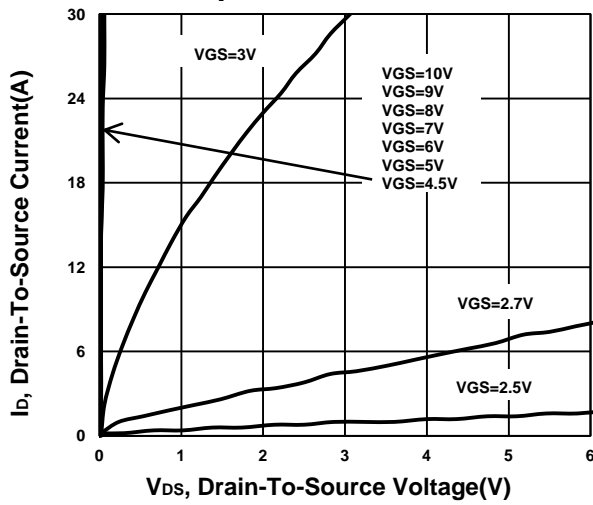
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)

Continuous Current	I _S			80	A
Forward Voltage ¹	V _{SD}	I _F = 20A, V _{GS} = 0V		1.3	V
Reverse Recovery Time	t _{rr}	I _F = 20A, di _F /dt = 100A / μS		37	nS
Reverse Recovery Charge	Q _{rr}			28	nC

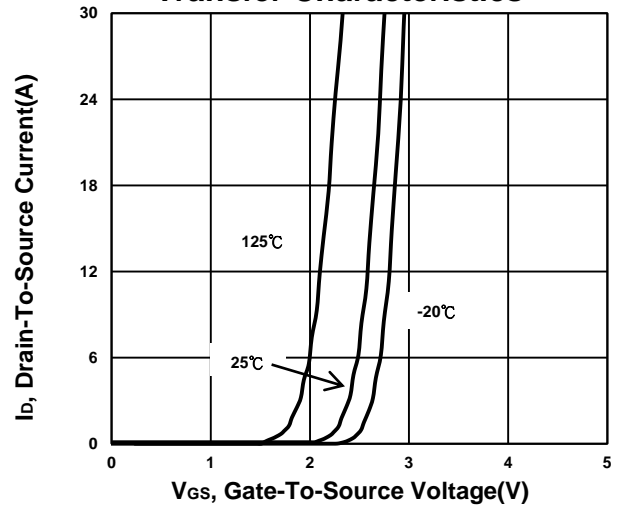
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

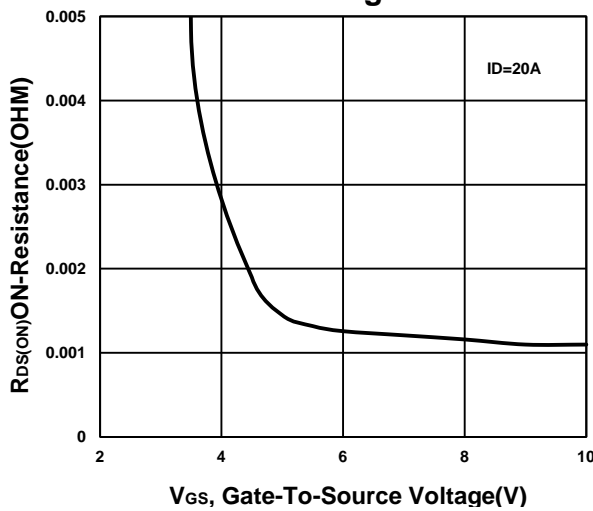
Output Characteristics



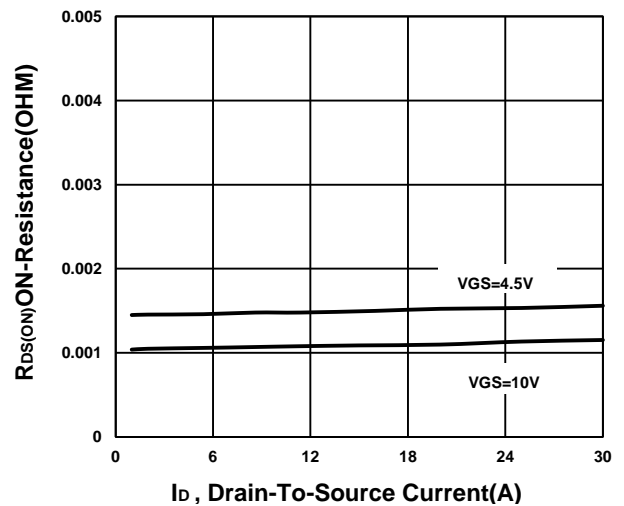
Transfer Characteristics



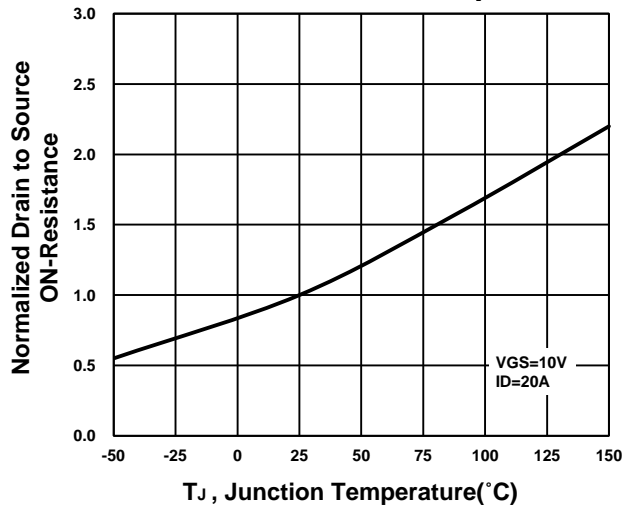
On-Resistance VS Gate-To-Source Voltage



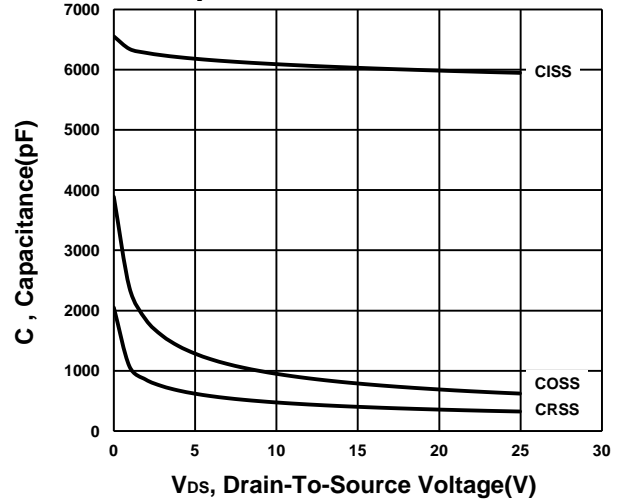
On-Resistance VS Drain Current



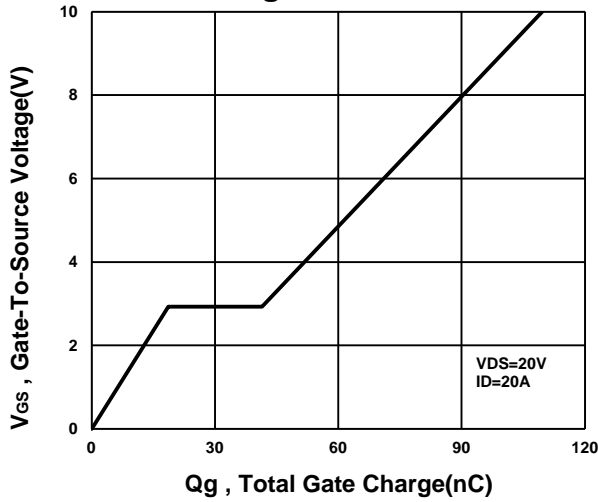
On-Resistance VS Temperature



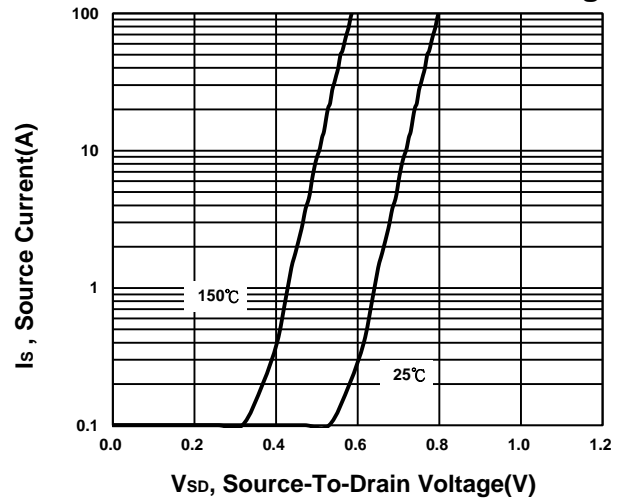
Capacitance Characteristic



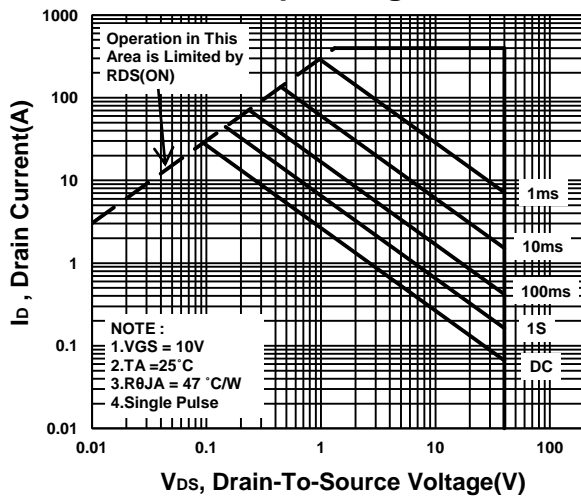
Gate charge Characteristics



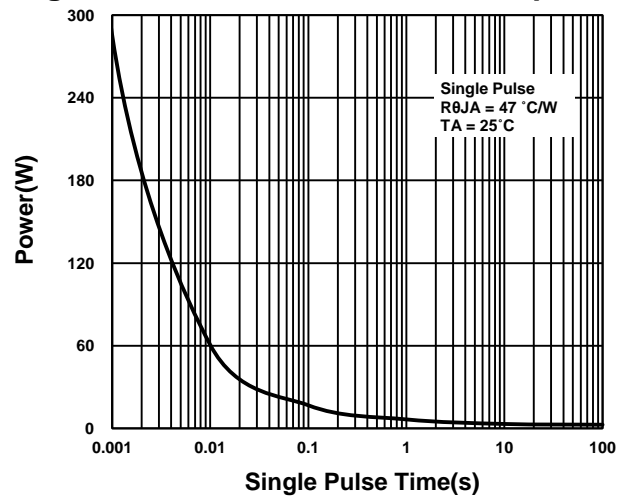
Source-Drain Diode Forward Voltage



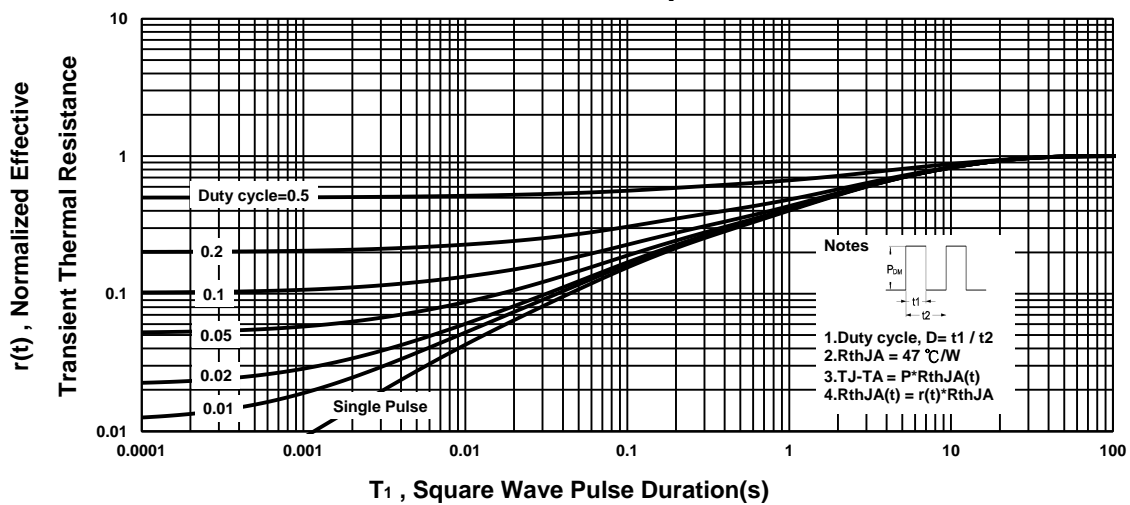
Safe Operating Area



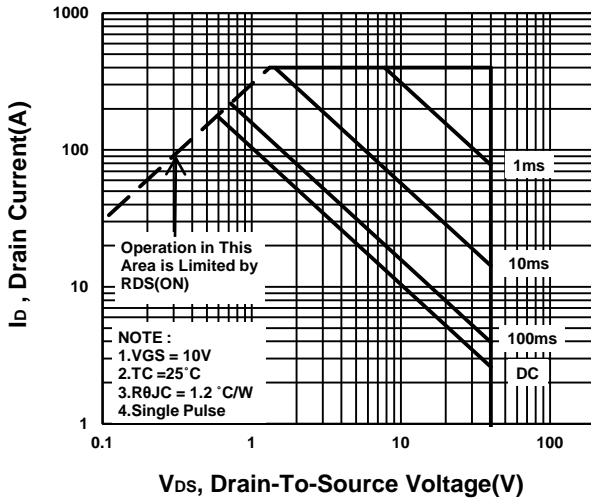
Single Pulse Maximum Power Dissipation



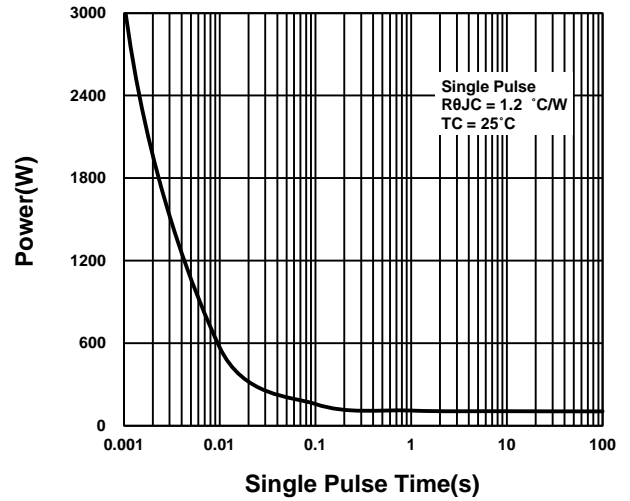
Transient Thermal Response Curve



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

