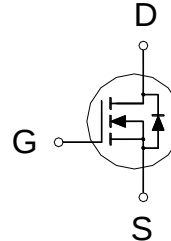


PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
40V	3.4m Ω	81A

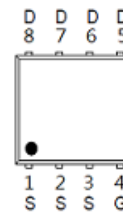


Features

- 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	81	A
	$T_C = 100\text{ }^{\circ}\text{C}$		51	
Pulsed Drain Current ¹		I_{DM}	127	
Continuous Drain Current	$T_A = 25\text{ }^{\circ}\text{C}$	I_D	22	
	$T_A = 70\text{ }^{\circ}\text{C}$		18	
Avalanche Current		I_{AS}	60	
Avalanche Energy	$L = 0.03\text{mH}$	E_{AS}	55	mJ
Power Dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	P_D	39	W
	$T_C = 100\text{ }^{\circ}\text{C}$		16	
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	$R_{\theta JC}$		3.2	

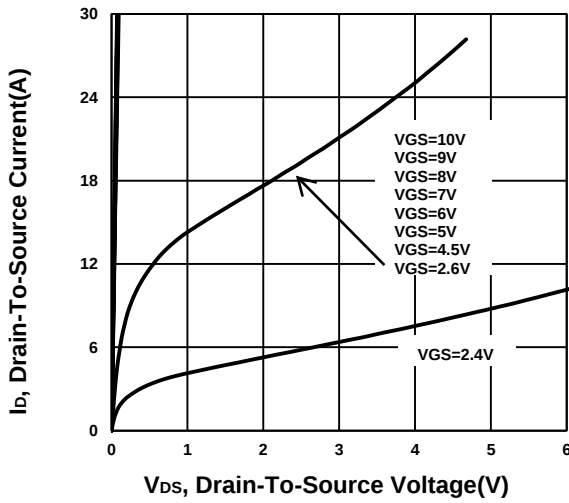
¹Pulse width limited by maximum junction temperature.²The value of $R_{\theta JA}$ is measured with the device mounted on 1in² FR-4 board with 2oz. Copper, in a still air environment with $T_A = 25^\circ\text{C}$.³The Power dissipation is based on $R_{\theta JA}$ $t \leq 10s$ value.⁴The maximum current 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 = 250μA	40			V
Gate Threshold Voltage	V _{GS(th)}		V _{DS} = V _{GS} , I _D = 250μA	1.3	1.6	2.3	
Gate-Body Leakage	I _{GSS}		V _{DS} = 0V, V _{GS} = ±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 °C			10	
Drain-Source On-State Resistance	R _{DS(ON)}		V _{GS} = 4.5V, I _D = 20A		3.3	4.6	mΩ
			V _{GS} = 10V, I _D = 20A		2.5	3.4	
Forward Transconductance	g _{fs}		V _{DS} = 5V, I _D = 20A		107		S
DYNAMIC							
Input Capacitance	C _{iss}		V _{GS} = 0V, V _{DS} = 20V, f = 700kHz		2136		pF
Output Capacitance	C _{oss}				552		
Reverse Transfer Capacitance	C _{rss}				12.2		
Gate Resistance	R _g		f = 1MHz		1.6		Ω
Total Gate Charge ⁵	Q _g	V _{GS} = 10V	V _{DS} = 20V , V _{GS} = 10V, I _D = 20A		30		nC
		V _{GS} = 4.5V			13		
Gate-Source Charge ⁵	Q _{gs}				6.9		
Gate-Drain Charge ⁵	Q _{gd}				2.1		
Turn-On Delay Time ⁵	t _{d(on)}		V _{DS} = 20V , I _D ≅ 20A, V _{GS} = 10V, R _{GEN} =6Ω		11		nS
Rise Time ⁵	t _r				63		
Turn-Off Delay Time ⁵	t _{d(off)}				37		
Fall Time ⁵	t _f				103		

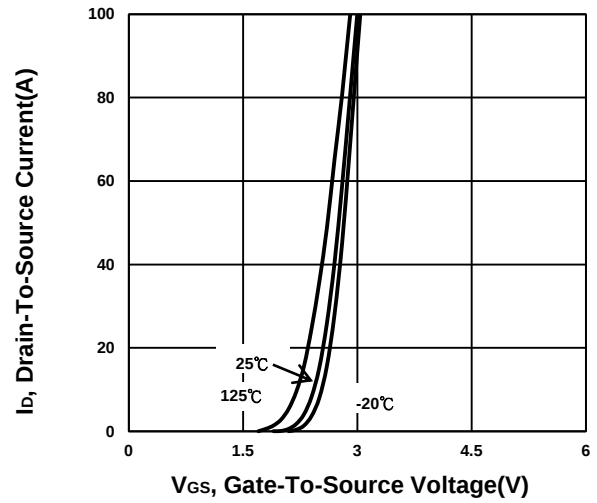
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)						
Continuous Current ⁶	I _S				33	A
Forward Voltage	V _{SD}	I _F = 20A, V _{GS} = 0V			1.2	V
Reverse Recovery Time	t _{rr}	I _F = 20A, dI _F /dt = 400A / μS		21		nS
Reverse Recovery Charge	Q _{rr}			41		nC

⁵Independent of operating temperature.
⁶The maximum current rating is package limited.

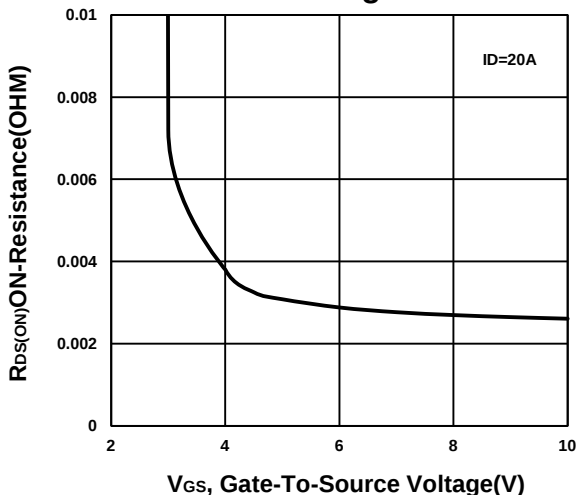
Output Characteristics



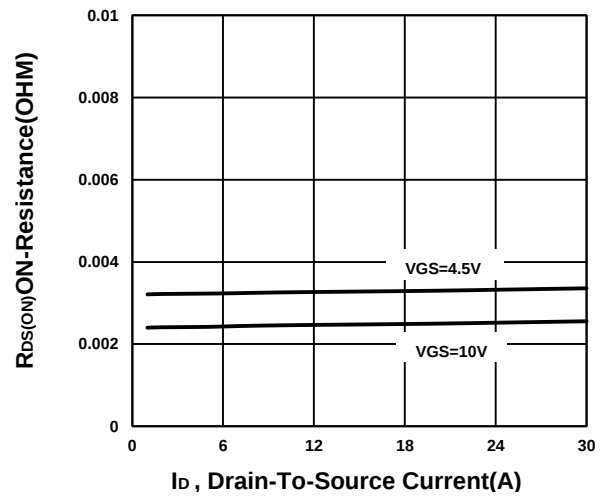
Transfer Characteristics



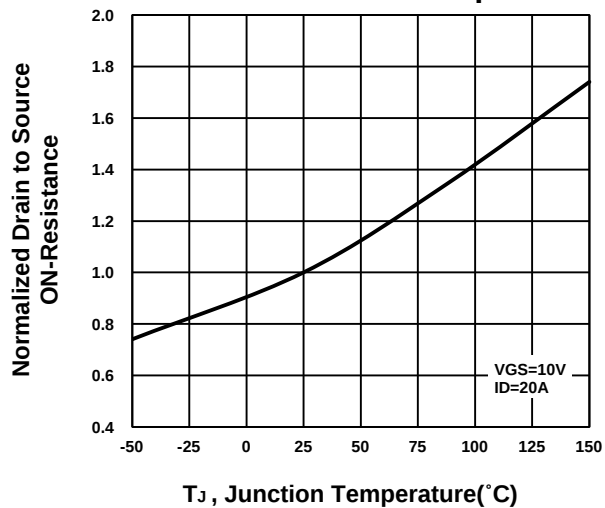
On-Resistance VS Gate-To-Source Voltage



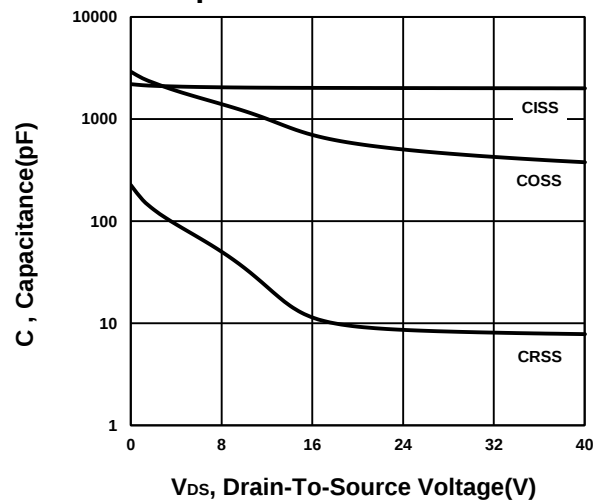
On-Resistance VS Drain Current



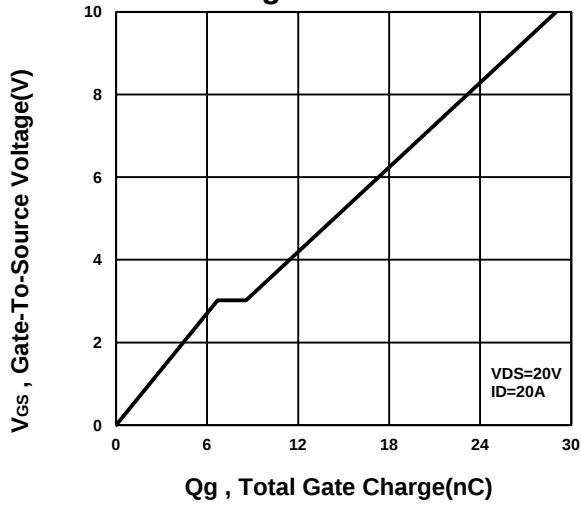
On-Resistance VS Temperature



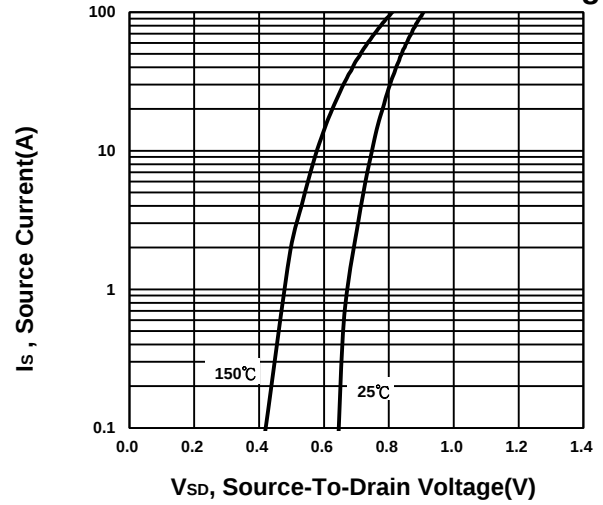
Capacitance Characteristic



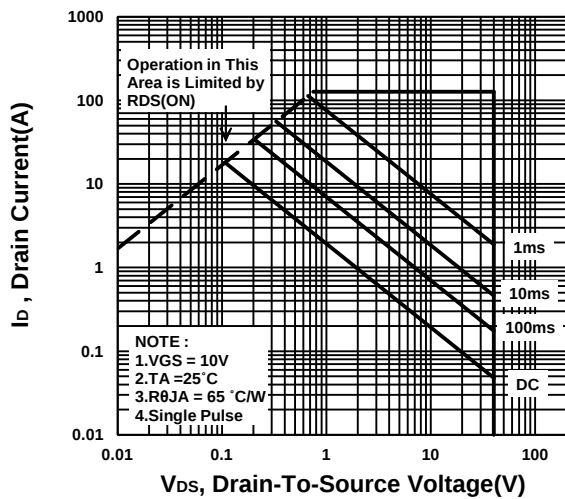
Gate charge Characteristics



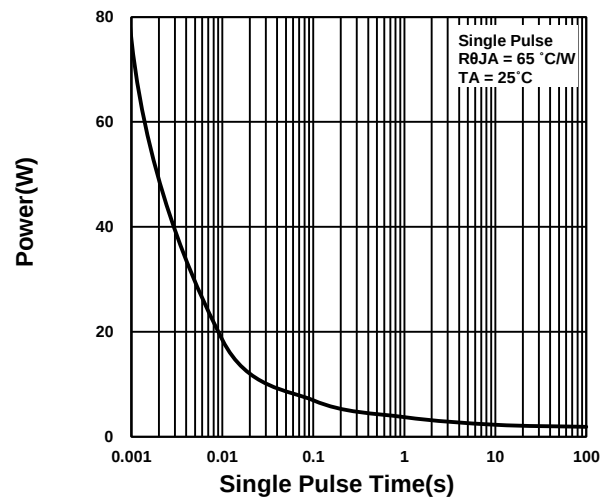
Source-Drain Diode Forward Voltage



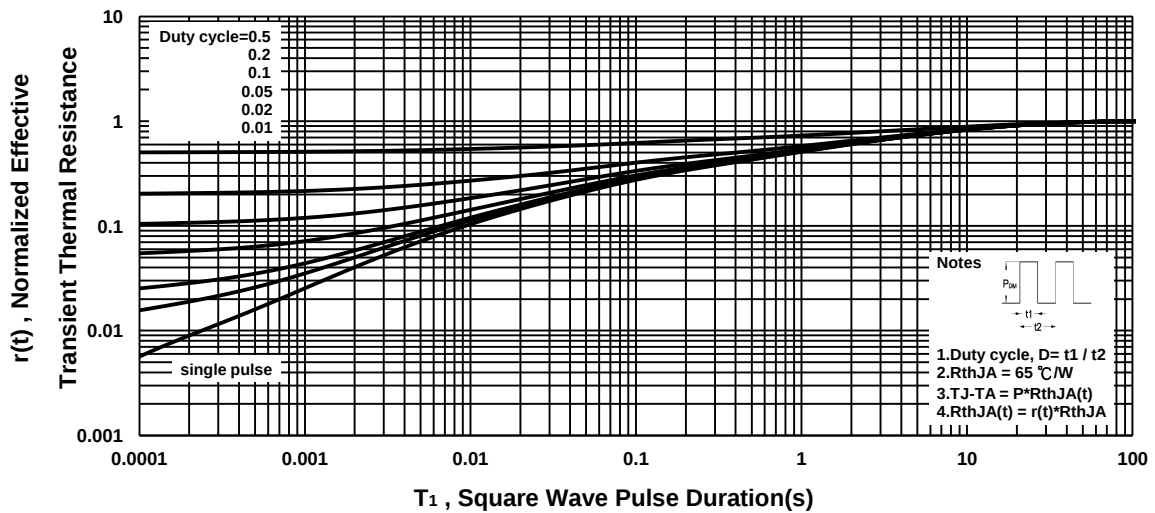
Safe Operating Area



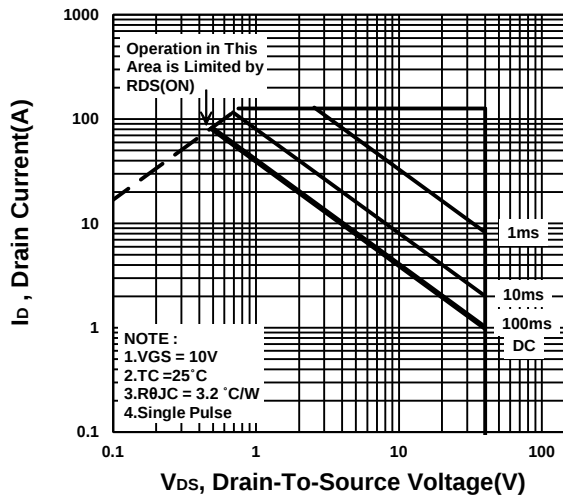
Single Pulse Maximum Power Dissipation



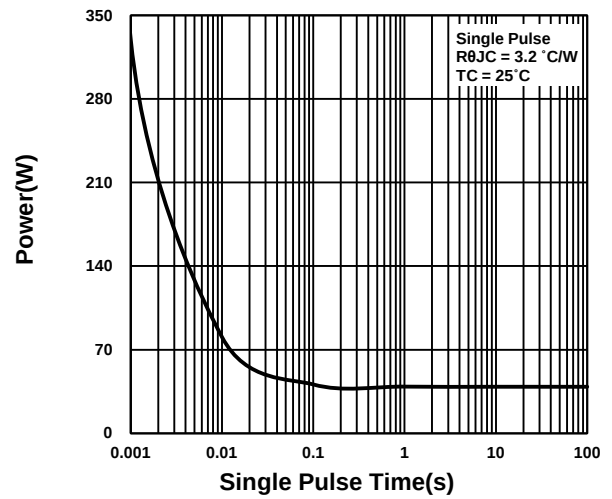
Transient Thermal Response Curve



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

