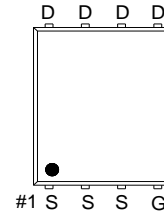
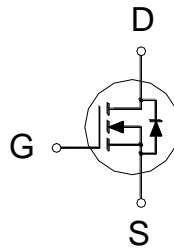




PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
40V	3.5mΩ	87A



G. GATE
D. DRAIN
S. SOURCE

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 ²	$T_C = 25\text{ °C}$	I_D	87	A
	$T_C = 100\text{ °C}$		55	
Pulsed Drain Current ¹		I_{DM}	150	
Continuous Drain Current	$T_A = 25\text{ °C}$	I_D	20	
	$T_A = 70\text{ °C}$		15.6	
Avalanche Current		I_{AS}	49	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	120	mJ
Power Dissipation	$T_C = 25\text{ °C}$	P_D	50	W
	$T_C = 100\text{ °C}$		20	
Power Dissipation	$T_A = 25\text{ °C}$	P_D	2.4	W
	$T_A = 70\text{ °C}$		1.5	
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 ³	$R_{\theta JA}$		50.2	°C / W
Junction-to-Case	$R_{\theta JC}$		2.5	

¹Pulse width limited by maximum junction temperature.

²Package limitation current is 51A.

³The 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 $T_A = 25\text{ °C}$.

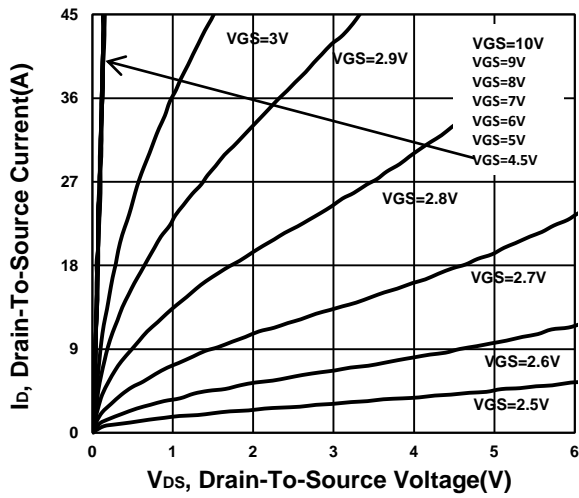
ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT	
			MIN	TYP	MAX		
STATIC							
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} = 0V, I _D = 250μA	40			V	
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = 250μA	1.3	1.75	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} = 32V, V _{GS} = 0V, T _J = 55 °C			10		
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 4.5V, I _D = 15A		3	4.6	mΩ	
		V _{GS} = 10V, I _D = 20A		2.6	3.5		
Forward Transconductance ¹	g _{fs}	V _{DS} = 5V, I _D = 20A		136		S	
DYNAMIC							
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 20V, f = 1MHz		3884		pF	
Output Capacitance	C _{oss}			441			
Reverse Transfer Capacitance	C _{rss}			329			
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		1.1		Ω	
Total Gate Charge ²	Q _g	V _{GS} = 10V	V _{DS} = 20V, V _{GS} = 10V, I _D = 20A	77		nC	
		V _{GS} = 4.5V		40			
Gate-Source Charge ²	Q _{gs}	11					
Gate-Drain Charge ²	Q _{gd}	19					
Turn-On Delay Time ²	t _{d(on)}	V _{DS} = 20V, I _D ≅ 20A, V _{GS} = 10V, R _{GEN} = 6Ω		25			nS
Rise Time ²	t _r			18			
Turn-Off Delay Time ²	t _{d(off)}			65			
Fall Time ²	t _f		18				
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)							
Continuous Current	I _S				38	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		25		nS	
Reverse Recovery Charge	Q _{rr}			19		nC	

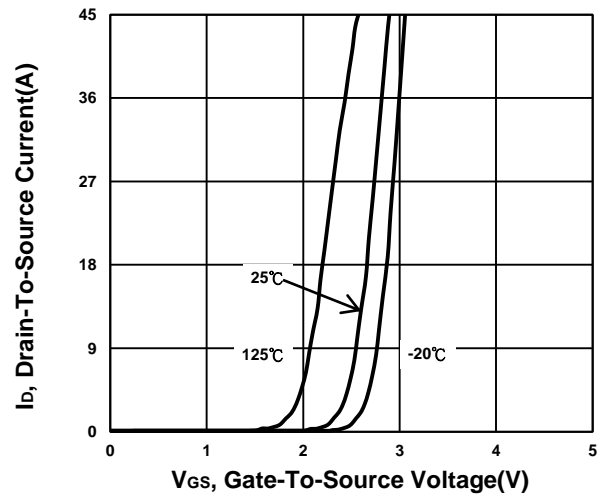
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

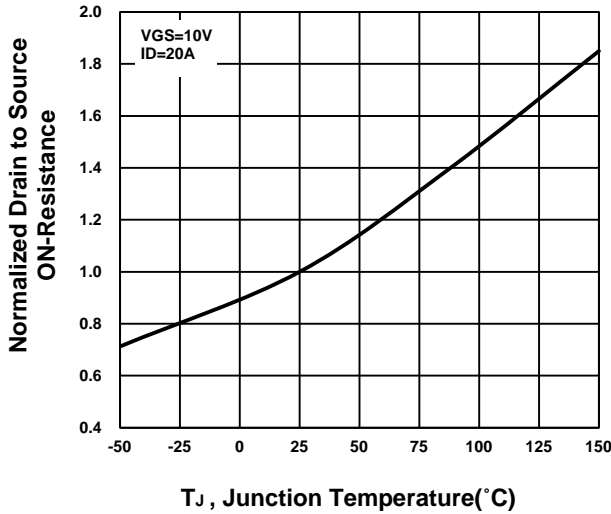
Output Characteristics



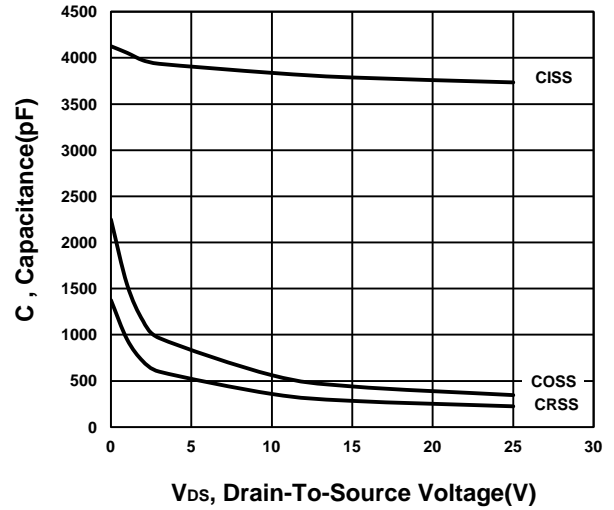
Transfer Characteristics



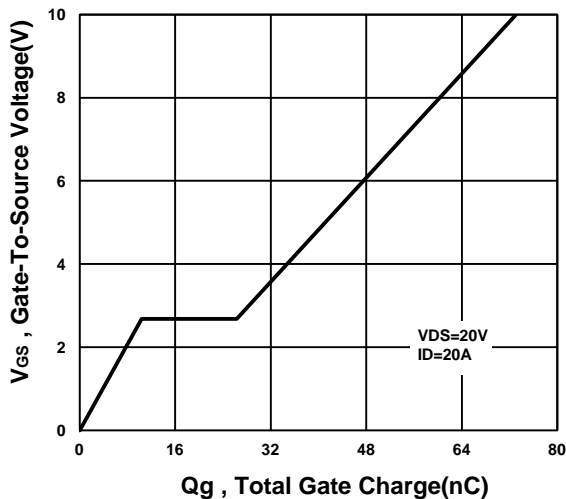
On-Resistance VS Temperature



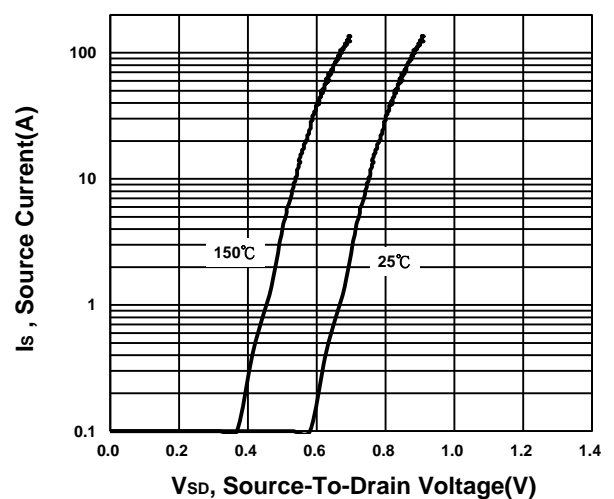
Capacitance Characteristic



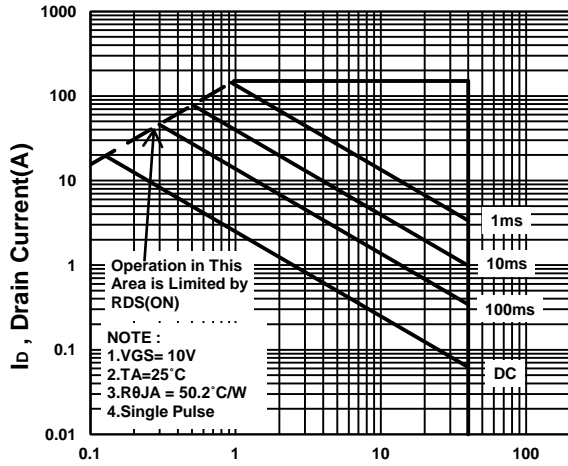
Gate charge Characteristics



Source-Drain Diode Forward Voltage

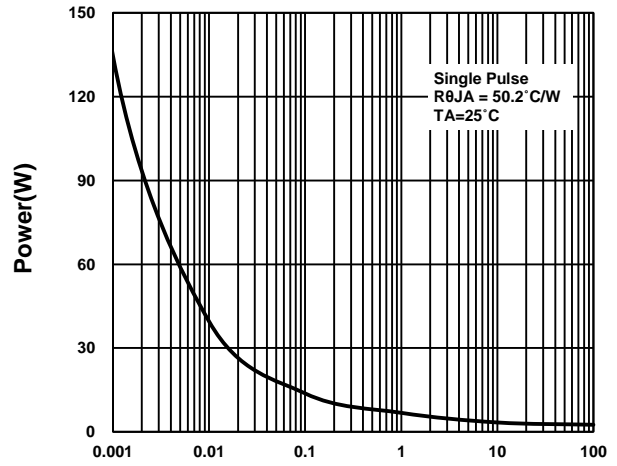


Safe Operating Area



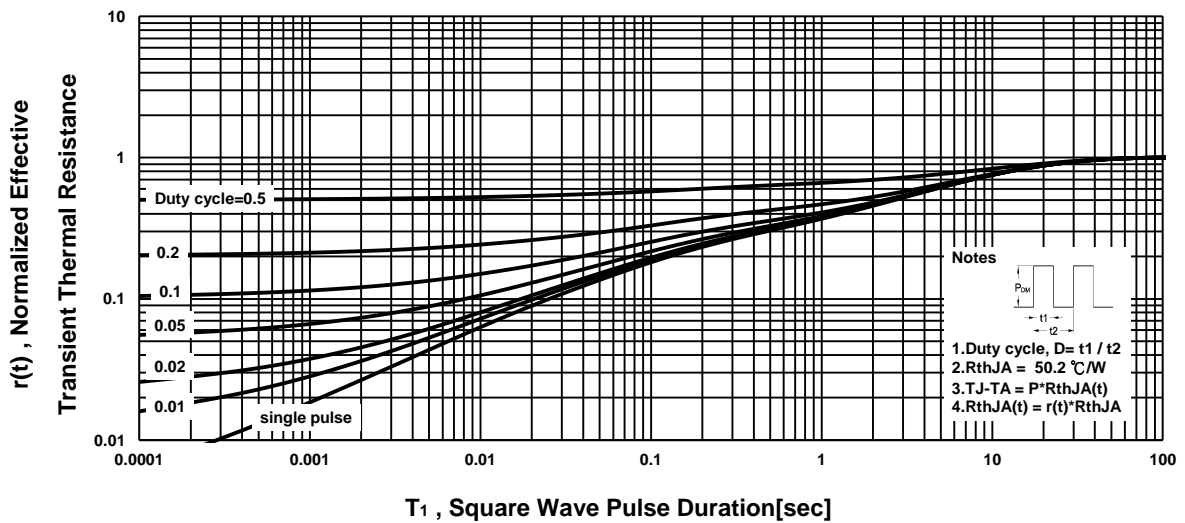
V_{DS}, Drain-To-Source Voltage(V)

Single Pulse Maximum Power Dissipation



Single Pulse Time(s)

Transient Thermal Response Curve



T₁, Square Wave Pulse Duration[sec]