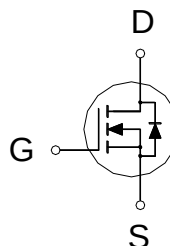


PRODUCT SUMMARY

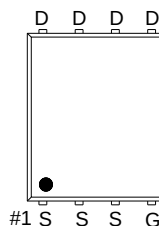
$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	3.45m Ω	90A


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}	30	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current ⁴	$T_C = 25\text{ }^{\circ}\text{C}$	I_D	90	A
	$T_C = 100\text{ }^{\circ}\text{C}$		57	
Pulsed Drain Current ¹		I_{DM}	170	
Continuous Drain Current	$T_A = 25\text{ }^{\circ}\text{C}$	I_D	31	
	$T_A = 70\text{ }^{\circ}\text{C}$		25	
Avalanche Current		I_{AS}	29	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	42	mJ
Power Dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	P_D	48	W
	$T_C = 100\text{ }^{\circ}\text{C}$		19	
Power Dissipation ³	$T_A = 25\text{ }^{\circ}\text{C}$	P_D	5.6	W
	$T_A = 70\text{ }^{\circ}\text{C}$		3.6	
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	$t \leq 10s$	$R_{\theta JA}$		22	°C / W
Junction-to-Ambient ²	Steady-State	$R_{\theta JA}$		53	
Junction-to-Case	Steady-State	$R_{\theta JC}$		2.6	

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 ($T_J = 25^\circ C$, Unless Otherwise Noted)

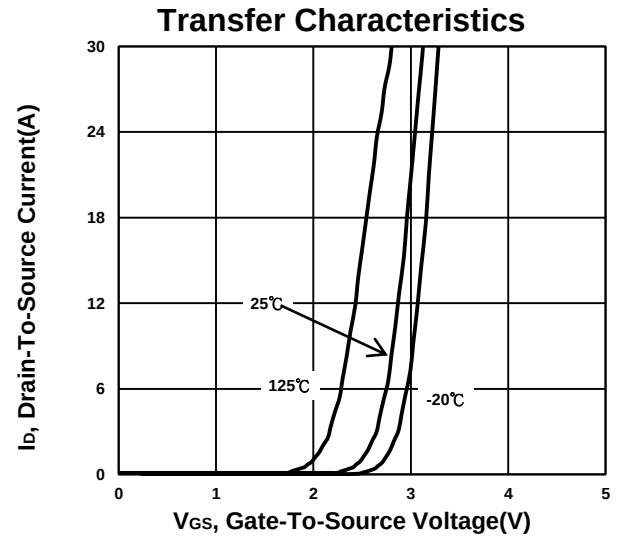
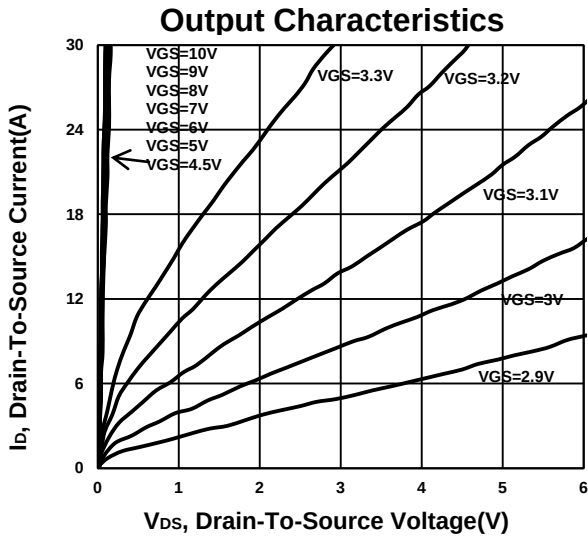
PARAMETER	SYMBOL		TEST CONDITIONS	LIMITS			UNIT
				MIN	TYP	MAX	
STATIC							
Drain-Source Breakdown Voltage	V _{(BR)DSS}		V _{GS} = 0V, I _D = 250μA	30			V
Drain-Source Breakdown Voltage (transient)	V _{(BR)DSS(t)}		V _{GS} = 0V, I _{D(aval)} = 12.6A T _{case} = 25 °C , t _{ransient} = 100ns	35			
Gate Threshold Voltage	V _{GS(th)}		V _{DS} = V _{GS} , I _D = 250μA	1.3	1.9	2.3	
Gate-Body Leakage	I _{GSS}		V _{DS} = 0V, V _{GS} = ±20V			±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 °C			10	
Drain-Source On-State Resistance ¹	R _{DS(ON)}		V _{GS} = 4.5V, I _D = 16A		4	5.5	mΩ
			V _{GS} = 10V, I _D = 20A		2.65	3.45	
Forward Transconductance ¹	g _{fs}		V _{DS} = 5V, I _D = 20A		70		S
DYNAMIC							
Input Capacitance	C _{iss}		V _{GS} = 0V, V _{DS} = 15V, f = 1MHz		1572		pF
Output Capacitance	C _{oss}				864		
Reverse Transfer Capacitance	C _{rss}				71		
Gate Resistance	R _g		V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		0.74		Ω
Total Gate Charge ²	Q _g	V _{GS} = 10V	V _{DS} = 15V , V _{GS} = 10V, I _D = 20A		32		nC
		V _{GS} = 4.5V			17.4		
Gate-Source Charge ²	Q _{gs}				4		
Gate-Drain Charge ²	Q _{gd}				8.8		

Turn-On Delay Time ²	t _{d(on)}	V _{DS} = 15V , I _D ≅ 20A, V _{GS} = 10V, R _{GEN} =6Ω		15		nS
Rise Time ²	t _r			95		
Turn-Off Delay Time ²	t _{d(off)}			43		
Fall Time ²	t _f			111		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)						
Continuous Current ³	I _S				48	A
Forward Voltage ¹	V _{SD}	I _F = 20A, V _{GS} = 0V			1	V
Reverse Recovery Time	t _{rr}	I _F = 20A, dl _F /dt = 100A / μS		36		nS
Reverse Recovery Charge	Q _{rr}			33		nC

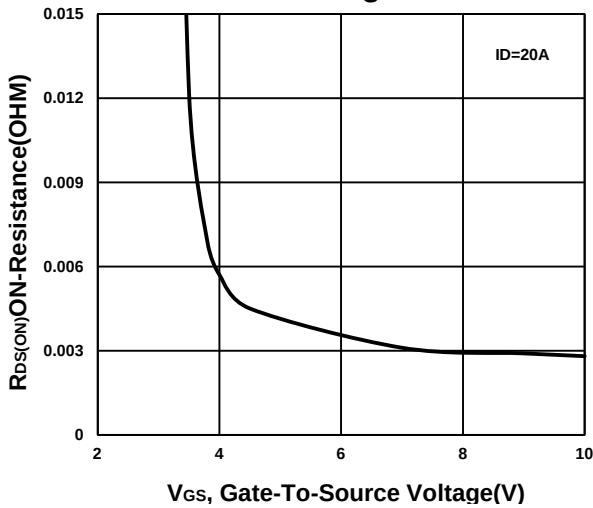
¹Pulse test : Pulse Width $\leq 300 \mu sec$, Duty Cycle $\leq 2\%$.

²Independent of operating temperature.

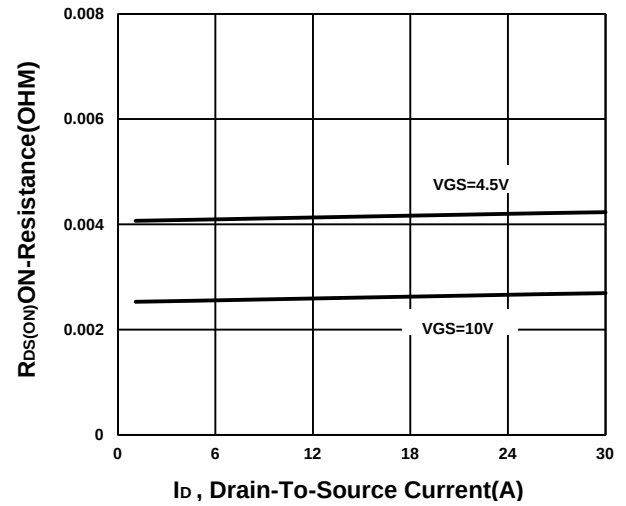
³The maximum current rating is package limited.



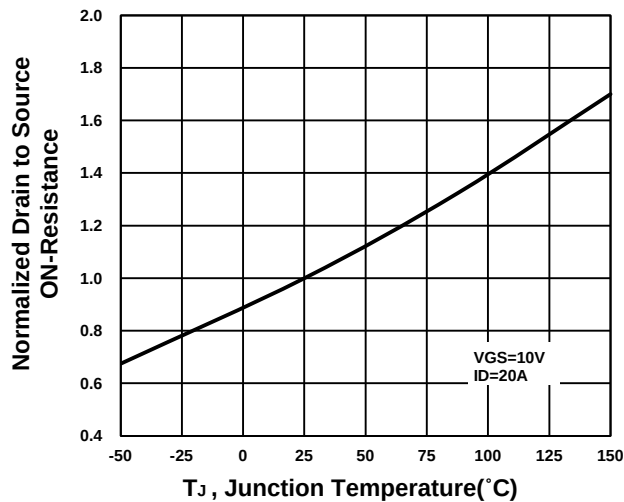
On-Resistance VS Gate-To-Source Voltage



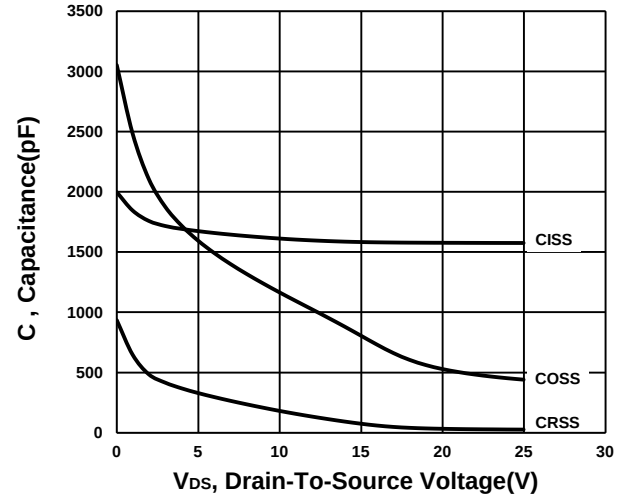
On-Resistance VS Drain Current



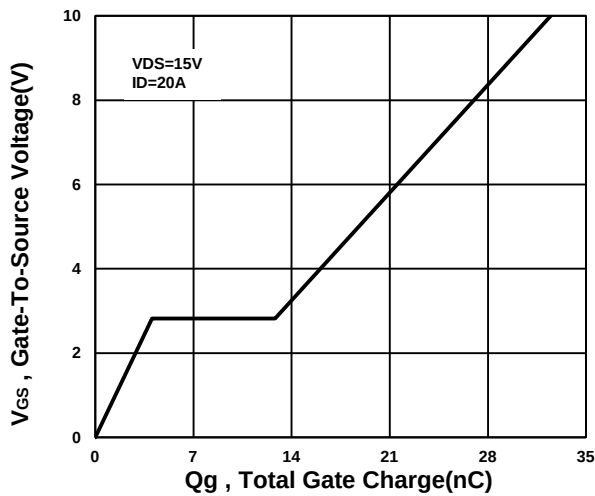
On-Resistance VS Temperature



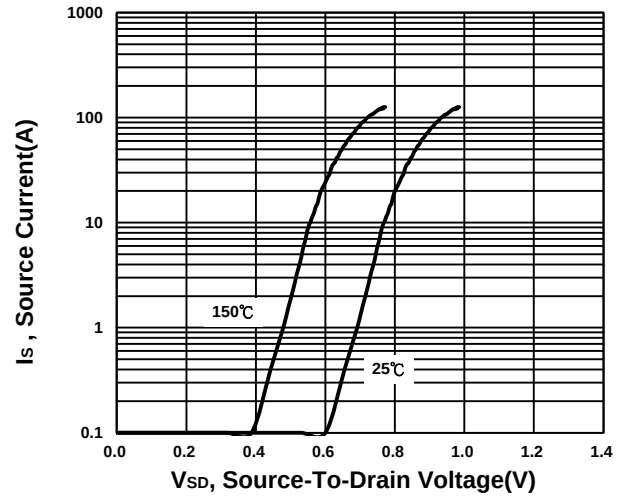
Capacitance Characteristic



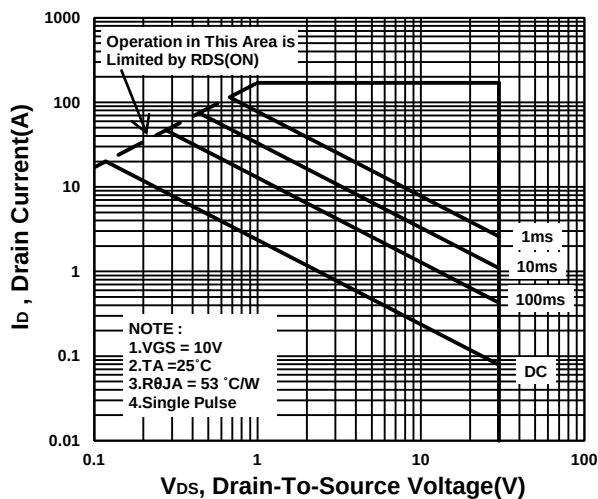
Gate charge Characteristics



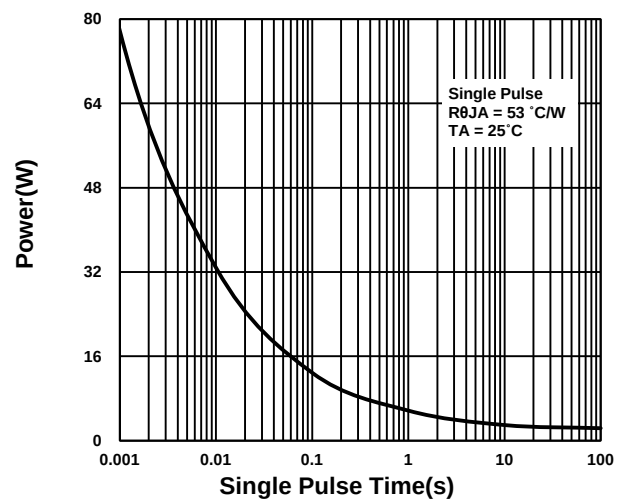
Source-Drain Diode Forward Voltage



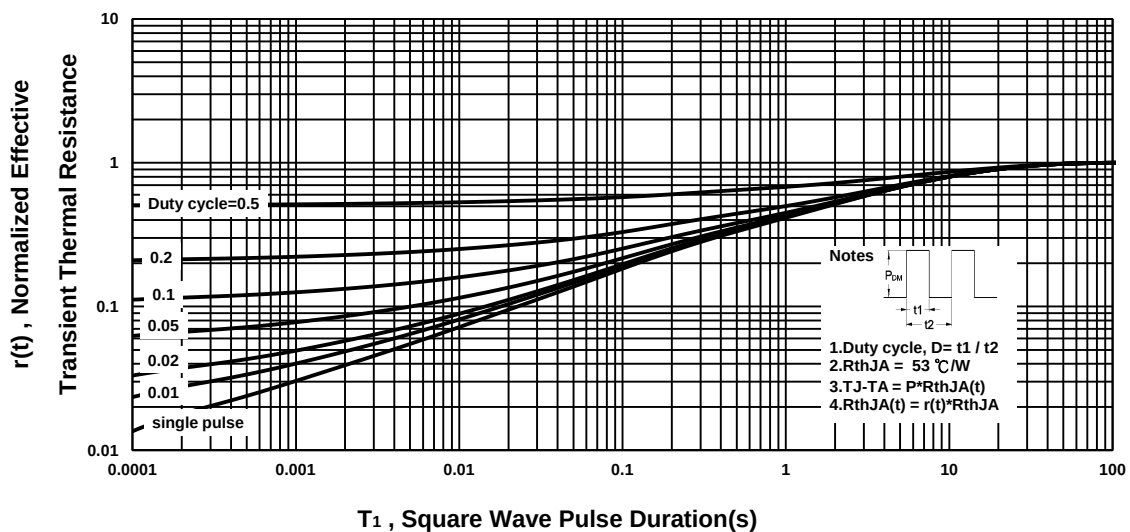
Safe Operating Area



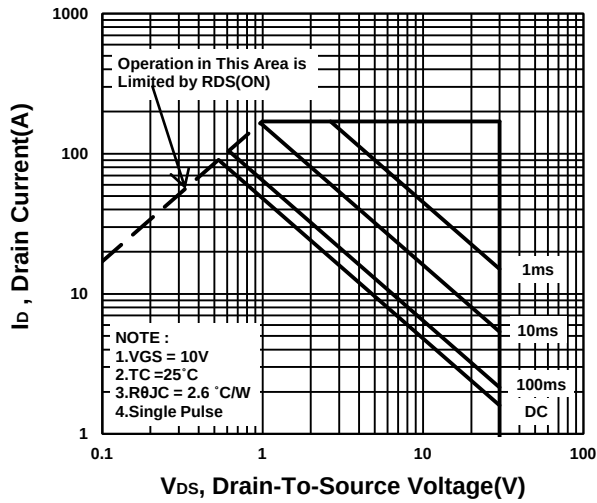
Single Pulse Maximum Power Dissipation



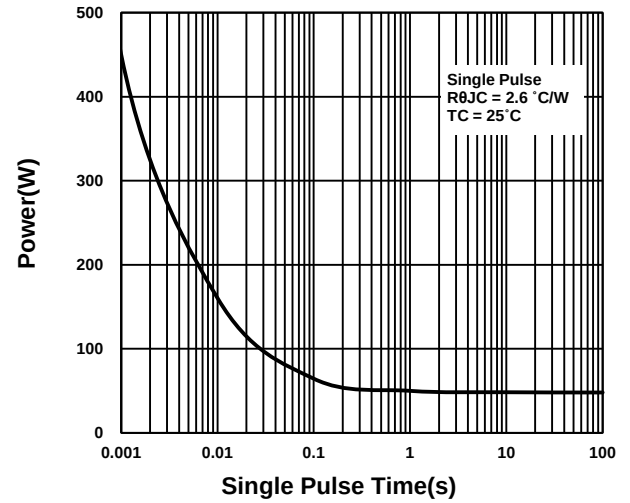
Transient Thermal Response Curve



Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve

