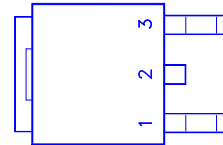
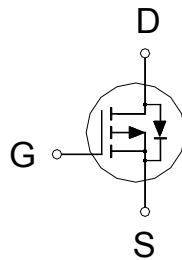




**PRODUCT SUMMARY**

$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
-40V	40m $\Omega$	-21A



- 1. GATE
- 2. DRAIN
- 3. SOURCE

**ABSOLUTE MAXIMUM RATINGS (T<sub>A</sub> = 25 °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	$I_D$	T <sub>C</sub> = 25 °C	-21
		T <sub>C</sub> = 70 °C	-17
Pulsed Drain Current <sup>1</sup>	$I_{DM}$	-70	A
Avalanche Current	$I_{AS}$	-27	
Avalanche Energy <sup>2</sup>	L = 0.1mH	$E_{AS}$	36
Power Dissipation	$P_D$	T <sub>C</sub> = 25 °C	30
		T <sub>C</sub> = 70 °C	20
Junction & Storage Temperature Range	T <sub>J</sub> , T <sub>stg</sub>	-55 to 150	°C

**THERMAL RESISTANCE RATINGS**

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		4.1	°C / W
Junction-to-Ambient	$R_{\theta JA}$		40	°C / W

<sup>1</sup>Pulse width limited by maximum junction temperature.

<sup>2</sup>V<sub>DD</sub> = -20V . Starting T<sub>J</sub> = 25°C.

**ELECTRICAL CHARACTERISTICS (T<sub>J</sub> = 25 °C, Unless Otherwise Noted)**

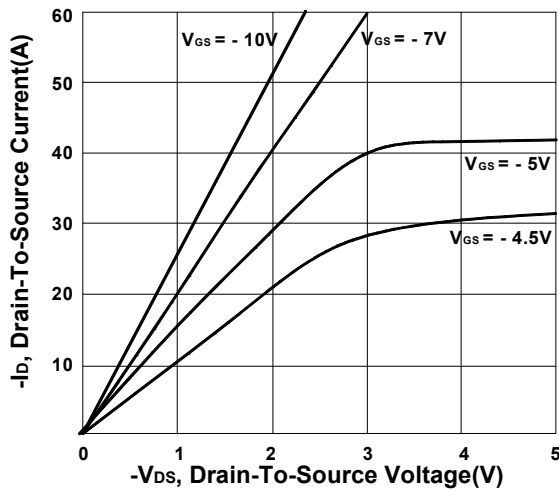
PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			MIN	TYP	MAX	
<b>STATIC</b>						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = -250\mu A$	-40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = -250\mu A$	-2.0	-2.5	-3	
Gate-Body Leakage	$I_{GSS}$	$V_{DS} = 0V, V_{GS} = \pm 20V$			±250	nA
Zero Gate Voltage Drain Current	$I_{DSS}$	$V_{DS} = -32V, V_{GS} = 0V$			1	$\mu A$
		$V_{DS} = -30V, V_{GS} = 0V, T_J = 125^\circ C$			10	
On-State Drain Current <sup>1</sup>	$I_{D(ON)}$	$V_{DS} = -5V, V_{GS} = -10V$	-70			A

Drain-Source On-State Resistance <sup>1</sup>	$R_{DS(ON)}$	$V_{GS} = -5V, I_D = -8A$	65	73	mΩ
		$V_{GS} = -7V, I_D = -8A$	35	50	
		$V_{GS} = -10V, I_D = -10A$	30	40	
Forward Transconductance <sup>1</sup>	$g_{fs}$	$V_{DS} = -10V, I_D = -10A$	20		S
<b>DYNAMIC</b>					
Input Capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = -20V, f = 1MHz$	1090		pF
Output Capacitance	$C_{oss}$		175		
Reverse Transfer Capacitance	$C_{rss}$		91		
Total Gate Charge <sup>2</sup>	$Q_g(V_{GS} = -10V)$	$V_{DS} = 0.5V_{(BR)DSS}, I_D = -18A$	17		nC
Total Gate Charge <sup>2</sup>	$Q_g(V_{GS} = -4.5V)$		8.5		
Gate-Source Charge <sup>2</sup>	$Q_{gs}$		5.5		
Gate-Drain Charge <sup>2</sup>	$Q_{gd}$		3		
Gate Resistance	$R_g$	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$	4.95		Ω
Turn-On Delay Time <sup>2</sup>	$t_{d(on)}$	$V_{DS} = -20V, R_L = 2Ω$ $I_D ≅ -10A, V_{GS} = -10V, R_{GS} = 6Ω$	6		nS
Rise Time <sup>2</sup>	$t_r$		16		
Turn-Off Delay Time <sup>2</sup>	$t_{d(off)}$		26		
Fall Time <sup>2</sup>	$t_f$		10		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T<sub>J</sub> = 25 °C)</b>					
Continuous Current	$I_S$			-21	A
Forward Voltage <sup>1</sup>	$V_{SD}$	$I_F = -1A, V_{GS} = 0V$		-1	V
Reverse Recovery Time	$t_{rr}$	$I_F = -10 A, di_F/dt = 100A / μS$	15.5		nS
Reverse Recovery Charge	$Q_{rr}$		7.9		nC

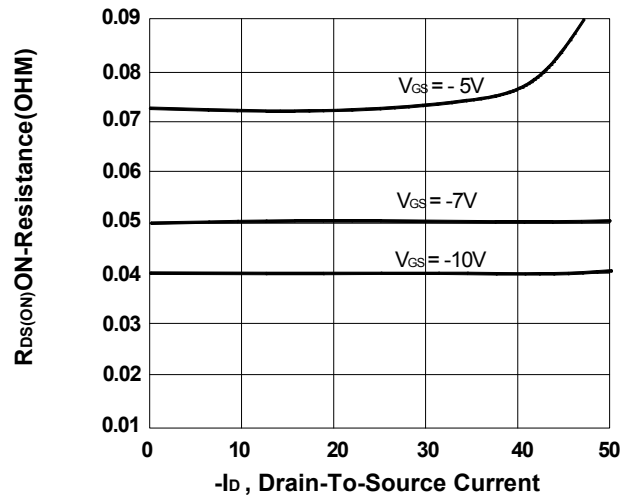
<sup>1</sup>Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

<sup>2</sup>Independent of operating temperature.

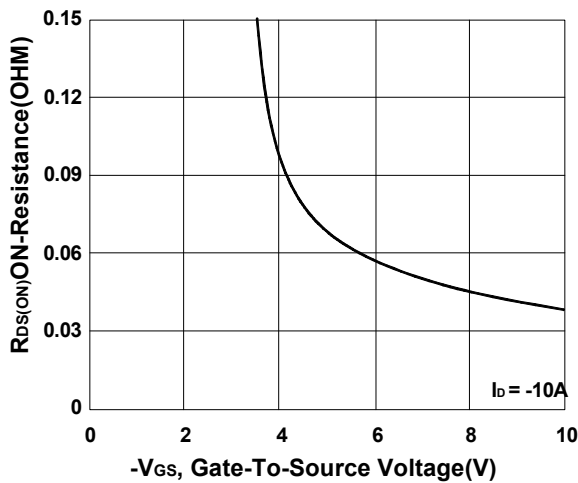
**Output Characteristics**



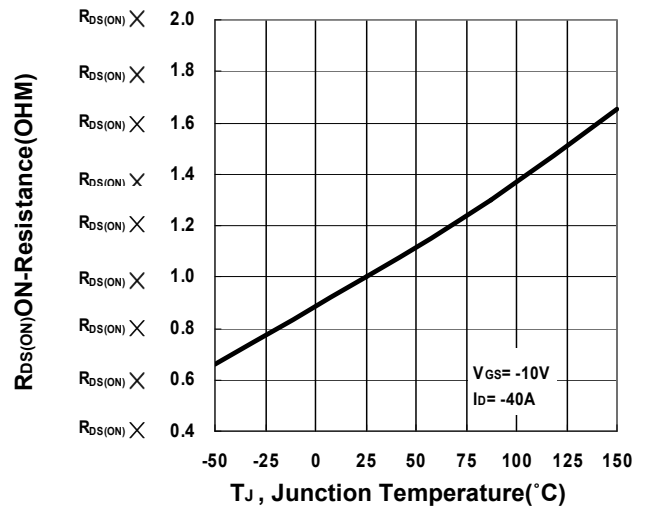
**On-Resistance VS Drain Current**



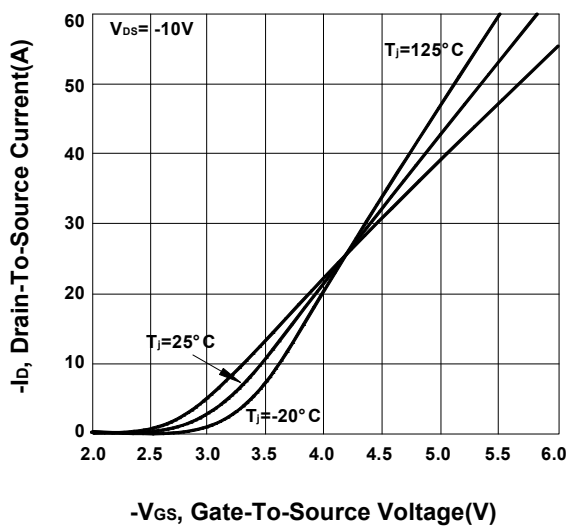
**On-Resistance VS Gate-To-Source**



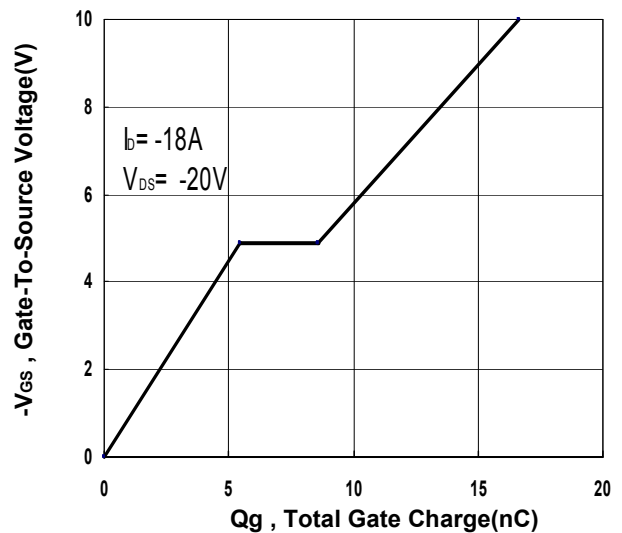
**On-Resistance VS Temperature**



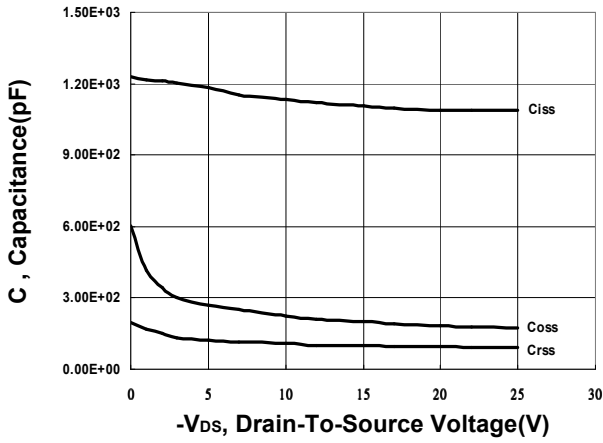
**Transfer Characteristics**



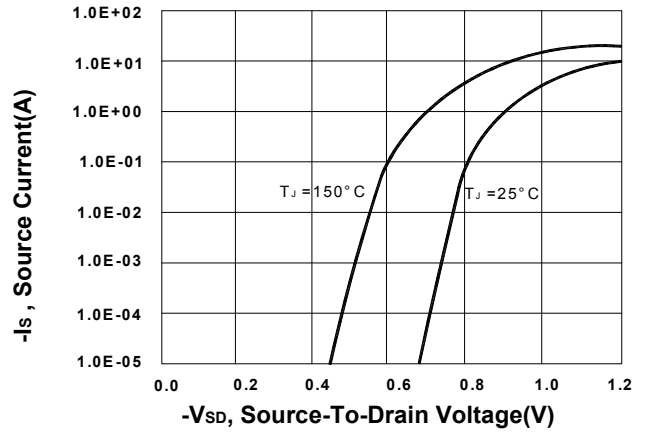
**Gate charge Characteristics**



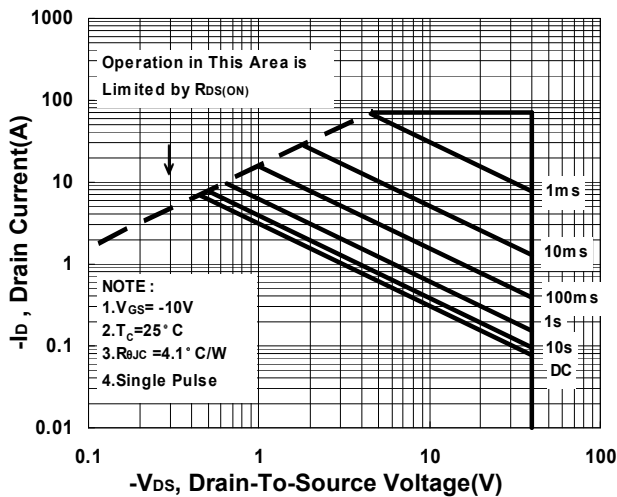
**Capacitance Characteristic**



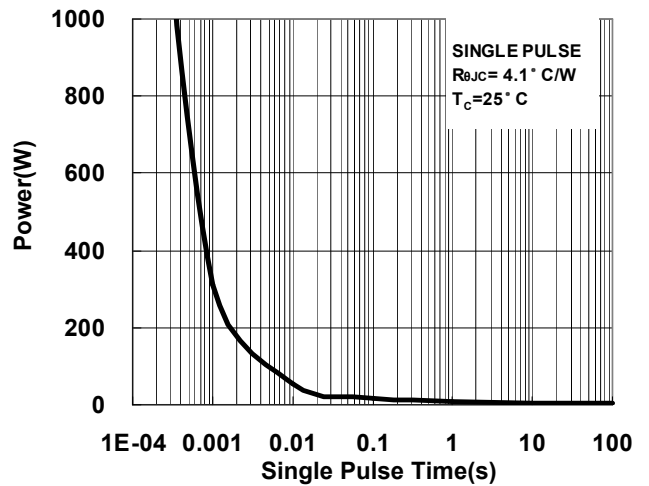
**Body Diode Forward Voltage VS Source current**



**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**

