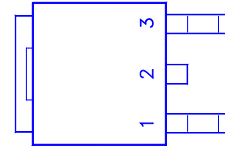
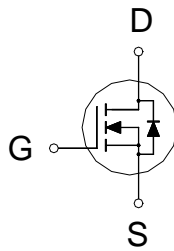




**PRODUCT SUMMARY**

$V_{(BR)DSS}$	$R_{DS(ON)}$	$I_D$
40V	25mΩ	21A



- 1. GATE
- 2. DRAIN
- 3. 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 <sup>2</sup>	$T_C = 25\text{ °C}$	$I_D$	21	A
	$T_C = 100\text{ °C}$		13	
Pulsed Drain Current <sup>1</sup>		$I_{DM}$	50	
Avalanche Current		$I_{AS}$	13	
Avalanche Energy	$L = 0.1\text{mH}$	$E_{AS}$	8.4	mJ
Power Dissipation	$T_C = 25\text{ °C}$	$P_D$	24	W
	$T_C = 100\text{ °C}$		9.6	
Junction & Storage Temperature Range		$T_J, T_{stg}$	-55 to 150	°C

**THERMAL RESISTANCE RATINGS**

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		5.2	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	

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

<sup>2</sup>Package limitation current is 15A

**ELECTRICAL CHARACTERISTICS ( $T_J = 25\text{ °C}$ , 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	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.3	1.7	3	
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
		$V_{DS} = 30V, V_{GS} = 0V, T_J = 125\text{ °C}$			10	
Drain-Source On-State Resistance <sub>1</sub>	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 12A$		20	35	mΩ
		$V_{GS} = 10V, I_D = 18A$		18	25	

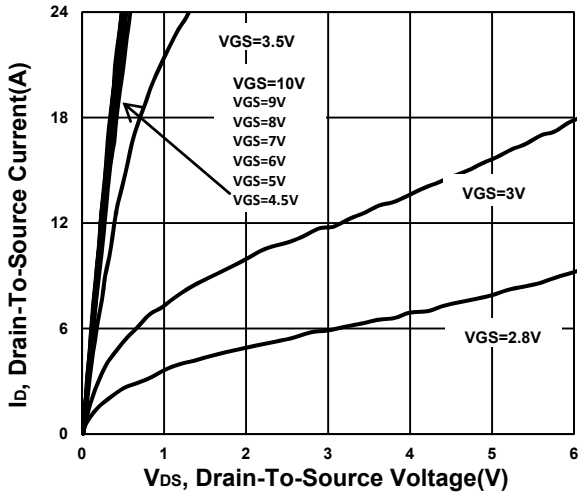
Forward Transconductance <sup>1</sup>	$g_{fs}$	$V_{DS} = 5V, I_D = 18A$		32		S
<b>DYNAMIC</b>						
Input Capacitance	$C_{iss}$	$V_{GS} = 0V, V_{DS} = 20V, f = 1MHz$		431		pF
Output Capacitance	$C_{oss}$			58		
Reverse Transfer Capacitance	$C_{rss}$			36		
Gate Resistance	$R_g$	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		3.9		$\Omega$
Total Gate Charge <sup>2</sup>	$Q_{g(VGS=10V)}$	$V_{DS} = 20V, I_D = 18A$		10		nC
	$Q_{g(VGS=4.5V)}$			5.4		
Gate-Source Charge <sup>2</sup>	$Q_{gs}$			1.2		
Gate-Drain Charge <sup>2</sup>	$Q_{gd}$			3.1		
Turn-On Delay Time <sup>2</sup>	$t_{d(on)}$		$V_{DS} = 20V$ $I_D \cong 18A, V_{GS} = 10V, R_{GEN} = 6\Omega$		10	
Rise Time <sup>2</sup>	$t_r$			40		
Turn-Off Delay Time <sup>2</sup>	$t_{d(off)}$			57		
Fall Time <sup>2</sup>	$t_f$			28		
<b>SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (<math>T_J = 25^\circ C</math>)</b>						
Continuous Current <sup>3</sup>	$I_S$			18		A
Forward Voltage <sup>1</sup>	$V_{SD}$	$I_F = 18A, V_{GS} = 0V$		1.3		V
Reverse Recovery Time	$t_{rr}$	$I_F = 18A, di_F/dt = 100A / \mu S$		9.6		nS
Reverse Recovery Charge	$Q_{rr}$			2.4		nC

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

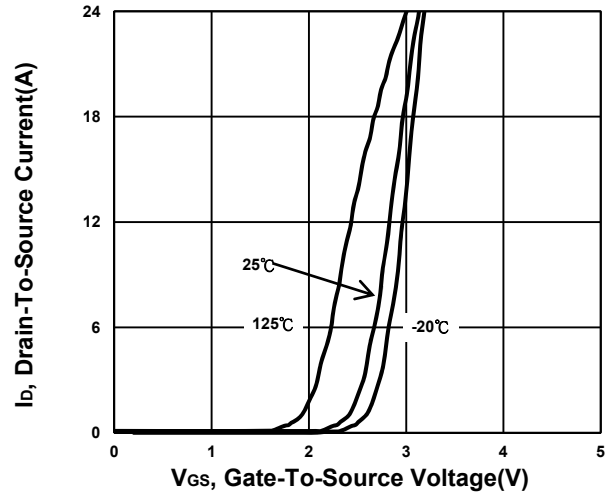
<sup>2</sup>Independent of operating temperature.

<sup>3</sup>Package limitation current is 15A

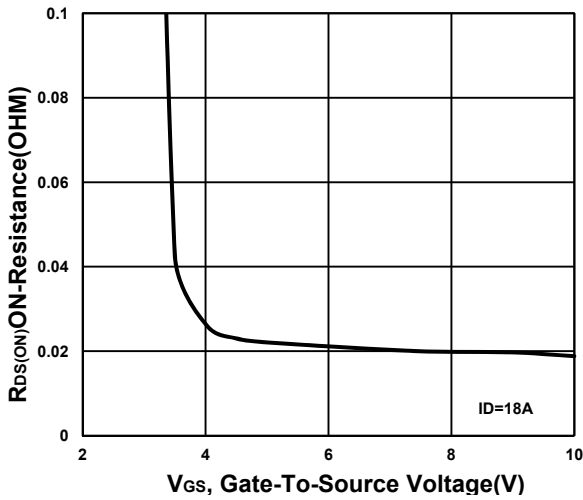
**Output Characteristics**



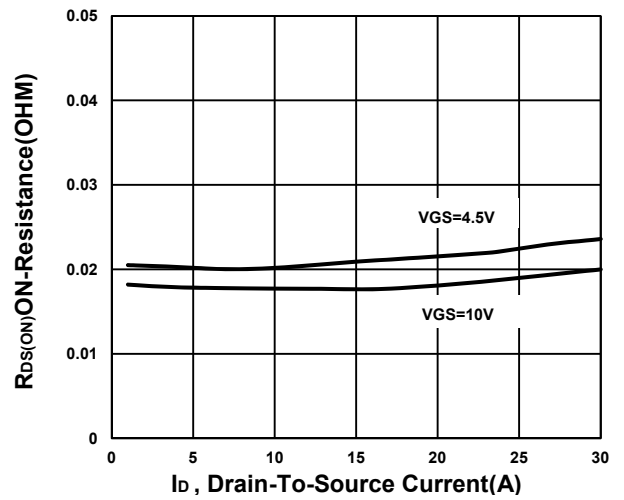
**Transfer Characteristics**



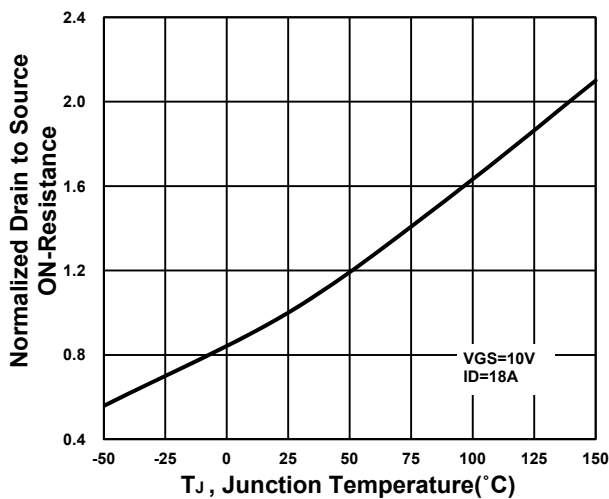
**On-Resistance VS Gate-To-Source**



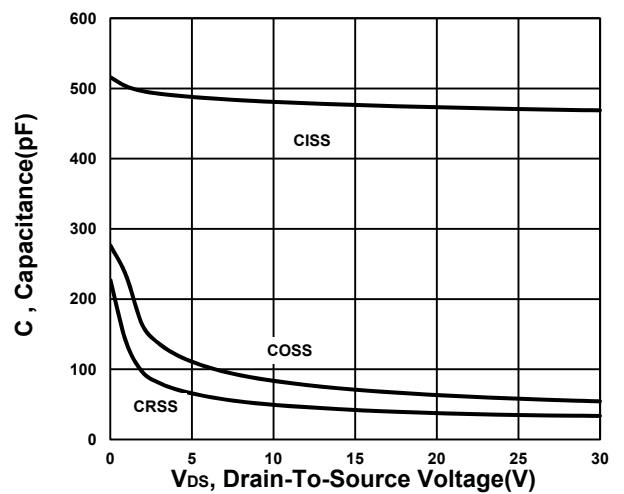
**On-Resistance VS Drain Current**



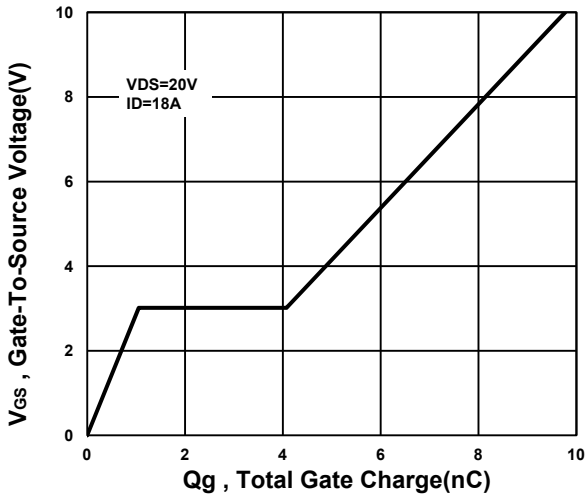
**On-Resistance VS Temperature**



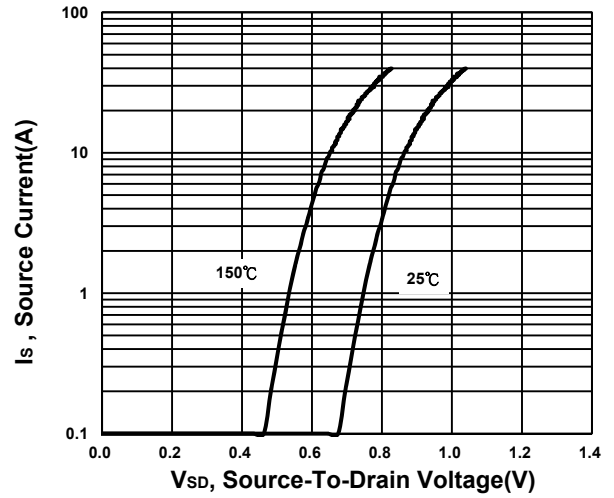
**Capacitance Characteristic**



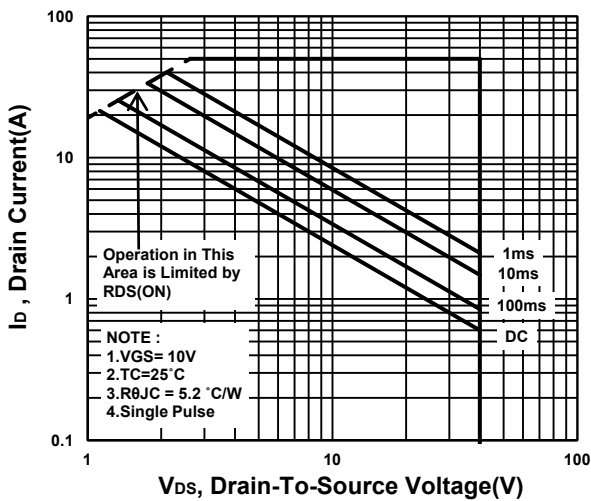
**Gate charge Characteristics**



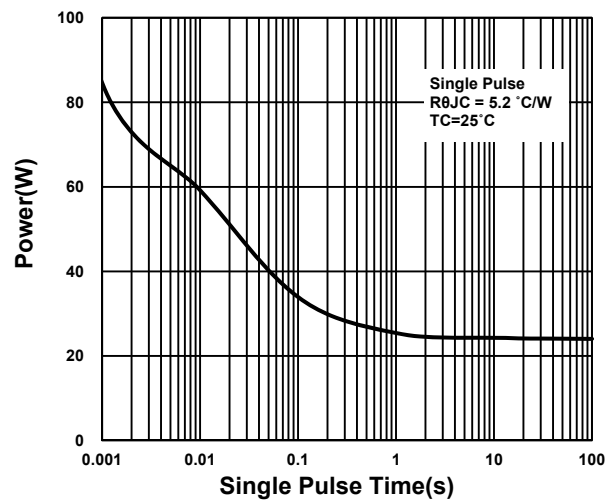
**Source-Drain Diode Forward Voltage**



**Safe Operating Area**



**Single Pulse Maximum Power Dissipation**



**Transient Thermal Response Curve**

