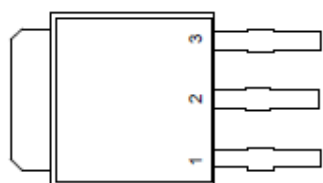


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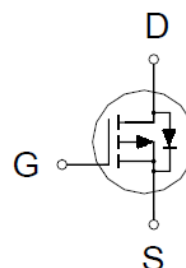
PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
-40V	15m Ω @ $V_{GS} = -10V$	-38A



TO-251(S)

100% R_g tested
100% UIS 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	
Continuous Drain Current	$T_C = 25\text{ }^{\circ}\text{C}$	I_D	-38	A
	$T_C = 100\text{ }^{\circ}\text{C}$		-24	
Pulsed Drain Current ¹		I_{DM}	-150	
Avalanche Current		I_{AS}	-44	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	96.8	mJ
Power Dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	P_D	34	W
	$T_C = 100\text{ }^{\circ}\text{C}$		14	
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	$R_{\theta JA}$		75	$^{\circ}\text{C} / \text{W}$
Junction-to-Case	$R_{\theta JC}$		3.6	

¹Pulse width limited by maximum junction temperature.

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			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	-1.5	-2.2	-3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±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 °			10	
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = -4.5V, I _D = -15A		20	29	mΩ
		V _{GS} = -10V, I _D = -20A		12	15	
Forward Transconductance ¹	g _{fs}	V _{DS} = -5V, I _D = -20A		53		S
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = -5V, V _{GS} = -10V	-150			A
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = -20V, f = 1MHz		2870		pF
Output Capacitance	C _{oss}			273		
Reverse Transfer Capacitance	C _{rss}			238		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		4.4		Ω
Total Gate Charge ²	Q _g	V _{DS} = 0.5V _{(BR)DSS} , V _{GS} = -10V, I _D = -20A		55		nC
Gate-Source Charge ²	Q _{gs}			12		
Gate-Drain Charge ²	Q _{gd}			15		
Turn-On Delay Time ²	t _{d(on)}	V _{DS} = -20V, I _D ≅ -20A, V _{GS} = -10V, R _{GEN} =6Ω		13		nS
Rise Time ²	t _r			31		
Turn-Off Delay Time ²	t _{d(off)}			72		
Fall Time ²	t _f			40		
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		22		nS
Reverse Recovery Charge	Q _{rr}			14		nC

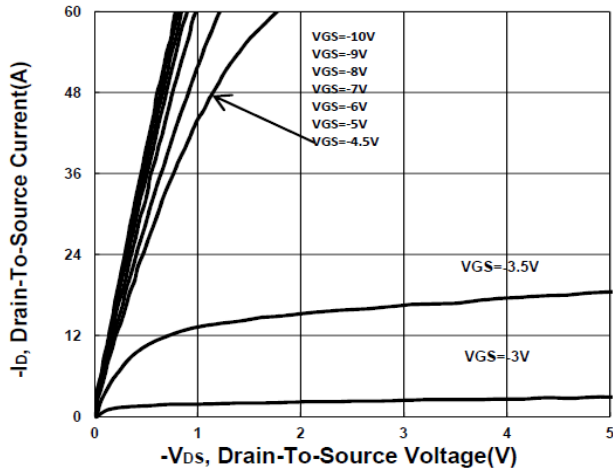
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

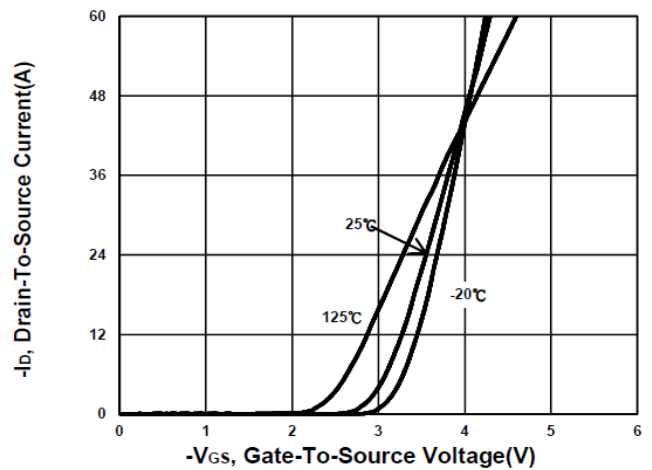
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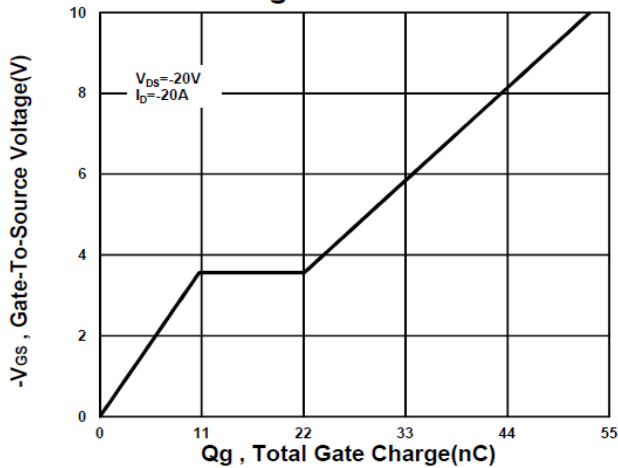
Output Characteristics



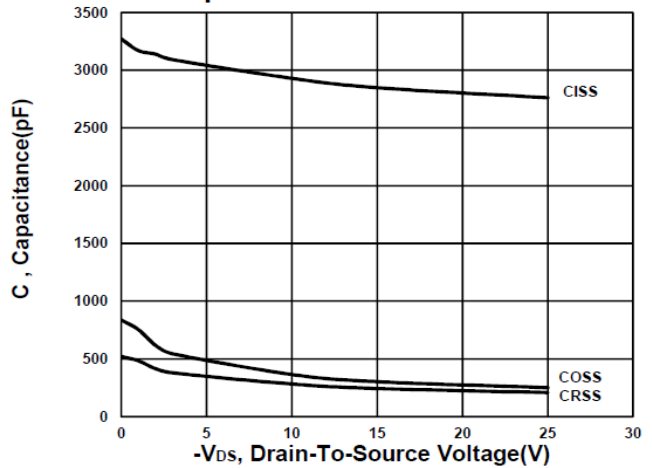
Transfer Characteristics



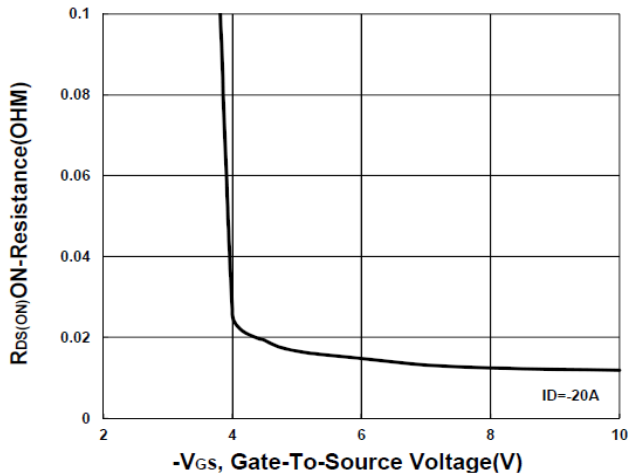
Gate charge Characteristics



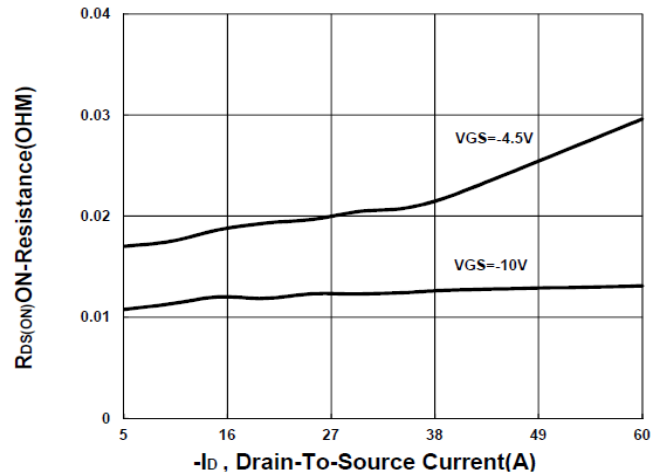
Capacitance Characteristic



On-Resistance VS Gate-To-Source



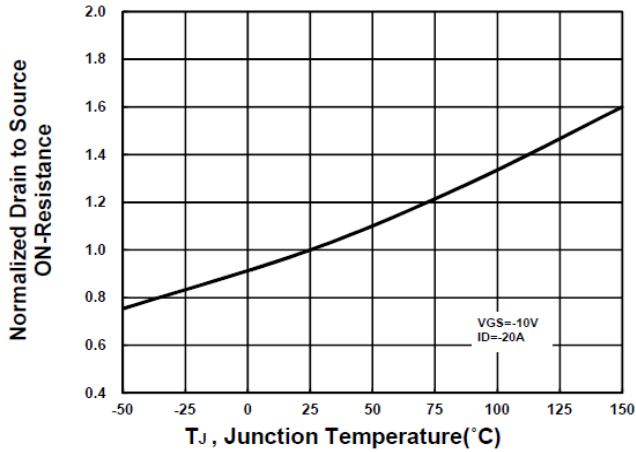
On-Resistance VS Drain Current



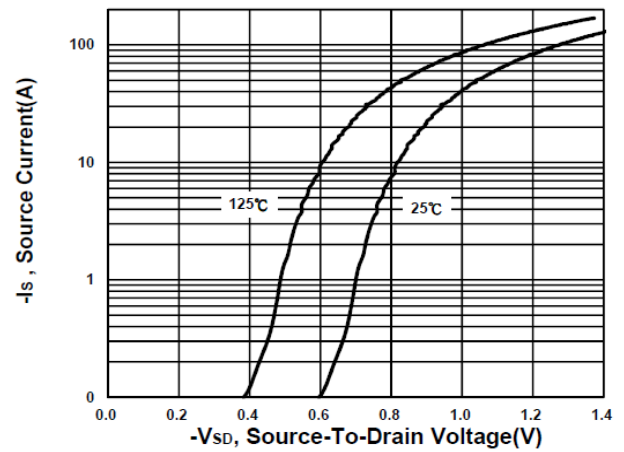
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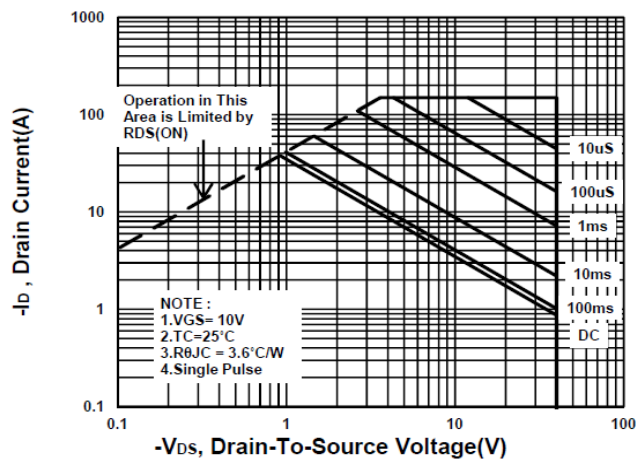
On-Resistance VS Temperature



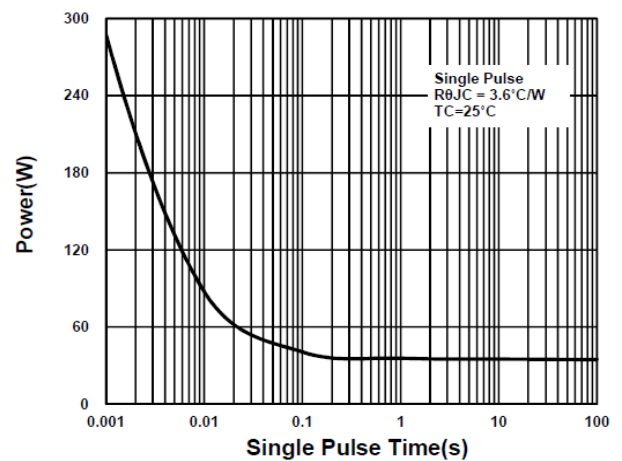
Source-Drain Diode Forward Voltage



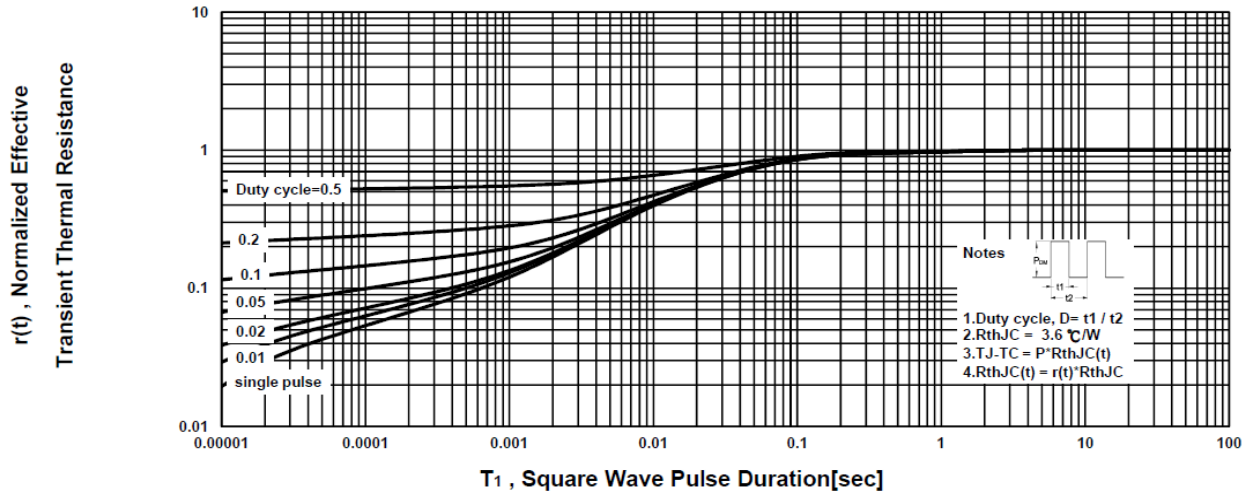
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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Package Dimension

TO-251 (S) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	6.3	6.6	6.8	H	2.1	2.3	2.5
B	4.8	5.3	5.5	J	0.4	0.5	0.6
C	6.7		7.57	K	0.35	0.5	0.65
D	3	3.5	4.5	L	0.9		1.5
E		2.3		M	5.3		6.22
F	0.5		1.12	N	1.4	1.6	2.1
G	0.4		0.89				

