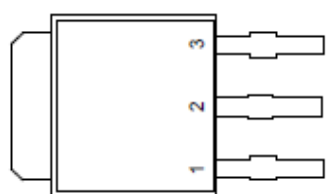


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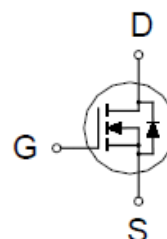
PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	3.7mΩ @ $V_{GS} = 10V$	105A



TO-251(S)

- 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}	30	V
Gate-Source Voltage		V_{GS}	±20	
Continuous Drain Current ²	$T_C = 25\text{ °C}$	I_D	105	A
	$T_C = 100\text{ °C}$		66	
Pulsed Drain Current ¹		I_{DM}	200	
Avalanche Current		I_{AS}	40.8	
Avalanche Energy	$L = 0.1mH$	E_{AS}	83	mJ
Power Dissipation	$T_C = 25\text{ °C}$	P_D	74	W
	$T_C = 100\text{ °C}$		29	
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		1.7	°C / W
Junction-to-Ambient	$R_{\theta JA}$		62.5	

¹Pulse width limited by maximum junction temperature.

²Package limitation current is 40A.

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ELECTRICAL CHARACTERISTICS ($T_J = 25^\circ\text{C}$, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	$V_{GS} = 0V, I_D = 250\mu A$	30			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\mu A$	1.3	1.7	2.3	
Gate-Body Leakage	I_{GSS}	$V_{DS} = 0V, V_{GS} = \pm 20V$			± 100	nA
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 24V, V_{GS} = 0V$			1	μA
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 125\text{ }^{\circ}C$			10	
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 15A$		3.9	4.8	m Ω
		$V_{GS} = 10V, I_D = 20A$		3.1	3.7	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 20A$		80		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1MHz$		2140		pF
Output Capacitance	C_{oss}			404		
Reverse Transfer Capacitance	C_{rss}			237		
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1MHz$		1.6		Ω
Total Gate Charge ²	$Q_g(V_{GS} = 10V)$	$V_{DS} = 15V, I_D = 20A$		43		nC
	$Q_g(V_{GS} = 4.5V)$			22.4		
Gate-Source Charge ²	Q_{gs}			6.2		
Gate-Drain Charge ²	Q_{gd}			13		
Turn-On Delay Time ²	$t_{d(on)}$	$V_{DS} = 15V, I_D \cong 20A,$ $V_{GS} = 10V, R_{GEN} = 6\Omega$		25		nS
Rise Time ²	t_r			15		
Turn-Off Delay Time ²	$t_{d(off)}$			54		
Fall Time ²	t_f			17		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS ($T_J = 25\text{ }^{\circ}C$)						
Continuous Current ³	I_S				105	A
Forward Voltage ¹	V_{SD}	$I_F = 20A, V_{GS} = 0V$			1	V
Reverse Recovery Time	t_{rr}	$I_F = 20A, di_F/dt = 100A / \mu S$		22		nS
Reverse Recovery Charge	Q_{rr}			10		nC

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

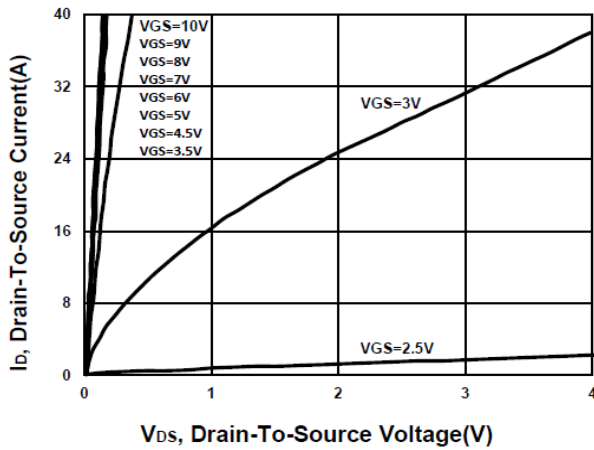
²Independent of operating temperature.

³Package limitation current is 40A.

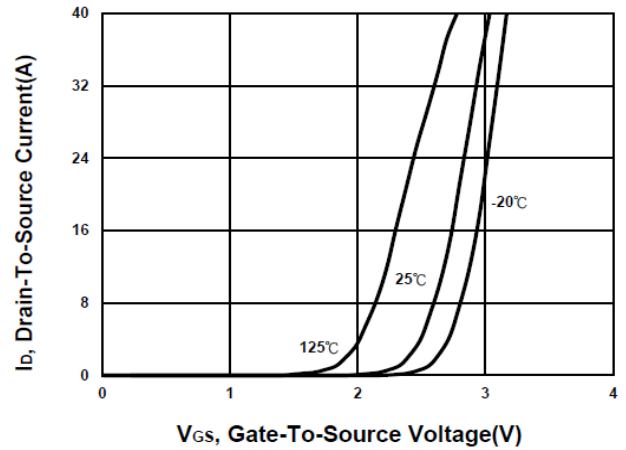
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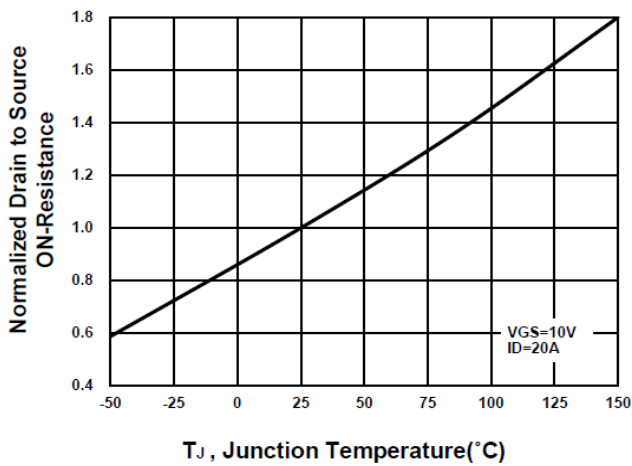
Output Characteristics



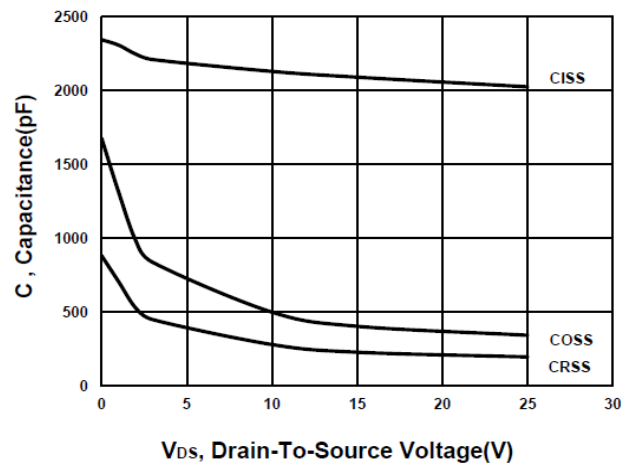
Transfer Characteristics



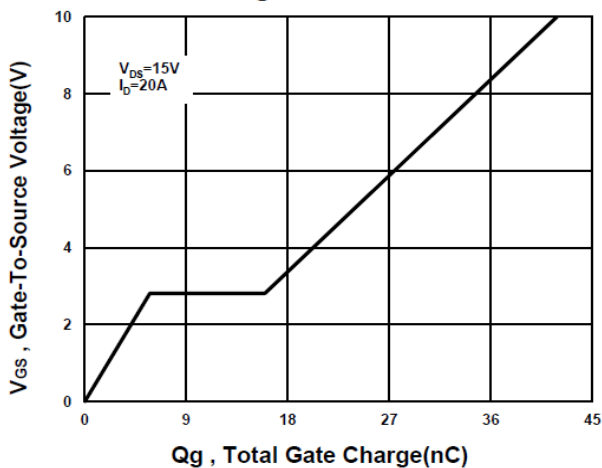
On-Resistance VS Temperature



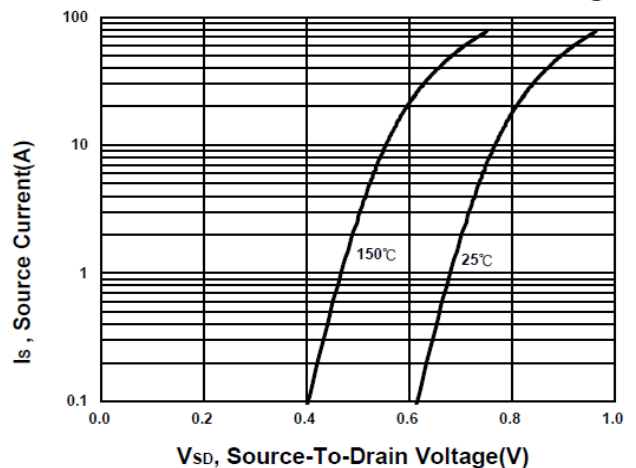
Capacitance Characteristic



Gate charge Characteristics



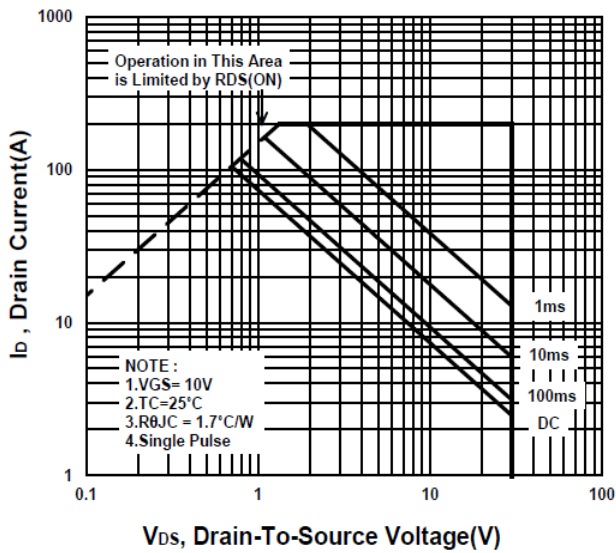
Source-Drain Diode Forward Voltage



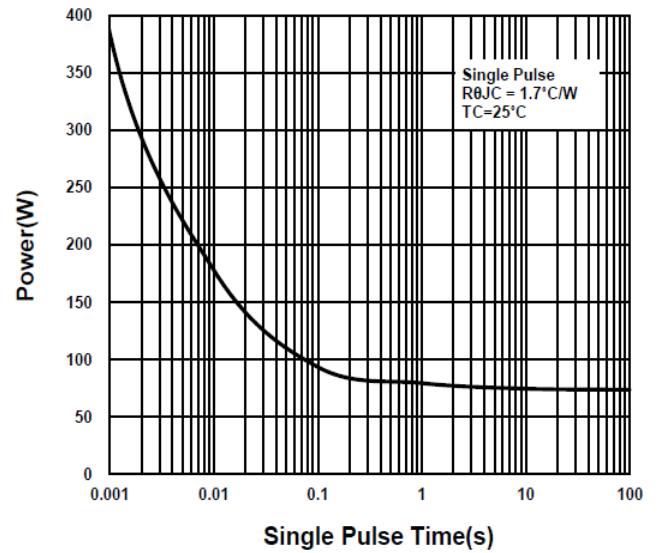
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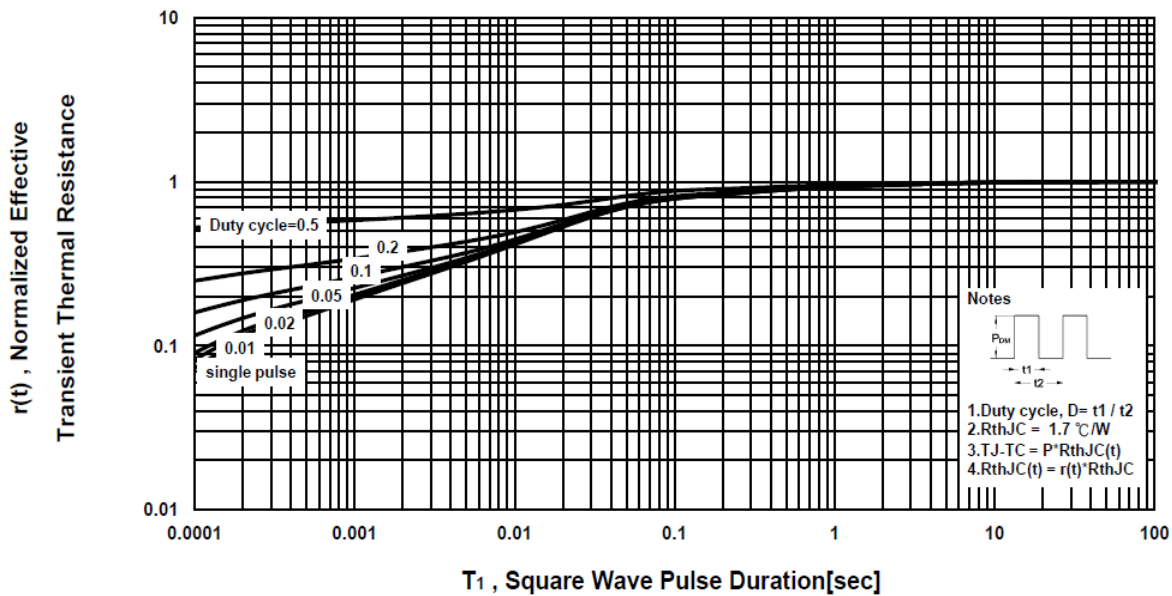
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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Package Dimension

TO-251 (IS) 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	0.6	0.9	1.1	N	1.4	1.6	2.1
G	0.4		0.89				

