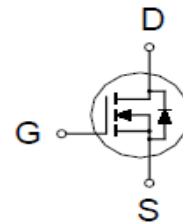
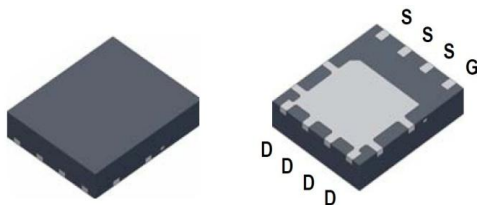


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N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
40V	8m Ω @ $V_{GS} = 10V$	42A



PDFN 5X6P

ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$ Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	40	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_c = 25^\circ\text{C}$	I_D	42	A
	$T_c = 100^\circ\text{C}$		26.6	
Pulsed Drain Current ¹		I_{DM}	100	
Continuous Drain Current	$T_A = 25^\circ\text{C}$	I_D	11	
	$T_A = 70^\circ\text{C}$		9	
Avalanche Current		I_{AS}	33.7	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	56.8	mJ
Power Dissipation	$T_c = 25^\circ\text{C}$	P_D	31	W
	$T_c = 100^\circ\text{C}$		12.5	
Power Dissipation	$T_A = 25^\circ\text{C}$	P_D	2.3	W
	$T_A = 70^\circ\text{C}$		1.5	
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	$R_{\theta JA}$		54	$^\circ\text{C} / \text{W}$
Junction-to-Case	$R_{\theta JC}$		4	

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 $T_A = 25^\circ\text{C}$.

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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	1.3	1.8	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 = 55 °C			10	
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 4.5V, I _D = 11A		6.4	12	mΩ
		V _{GS} = 10V , I _D = 11A		5.5	8	
Forward Transconductance ¹	g _{fs}	V _{DS} = 5V, I _D = 11A		55		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 15V, f = 1MHz		1672		pF
Output Capacitance	C _{oss}			206		
Reverse Transfer Capacitance	C _{rss}			124		
Gate Resistance	R _g	V _{GS} = 0V, V _{DS} = 0V, f = 1MHz		1.3		Ω
Total Gate Charge ²	Q _g	V _{DS} = 15V, V _{GS} = 10V, I _D = 11A		34		nC
			V _{GS} =10V		18	
Gate-Source Charge ²	Q _{gs}			5.1		
Gate-Drain Charge ²	Q _{gd}			8.3		
Turn-On Delay Time ²	t _{d(on)}	I _D ≅ 11A, V _{GS} = 10V, R _{GEN} = 6Ω		25		nS
Rise Time ²	t _r			11		
Turn-Off Delay Time ²	t _{d(off)}			41		
Fall Time ²	t _f			12		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _J = 25 °C)						
Continuous Current	I _S				24	A
Forward Voltage ¹	V _{SD}	I _F = 11A, V _{GS} = 0V			1.3	V
Reverse Recovery Time	t _{rr}	I _F = 11A, dI _F /dt = 100A / μS		19.5		nS
Reverse Recovery Charge	Q _{rr}			9.4		nC

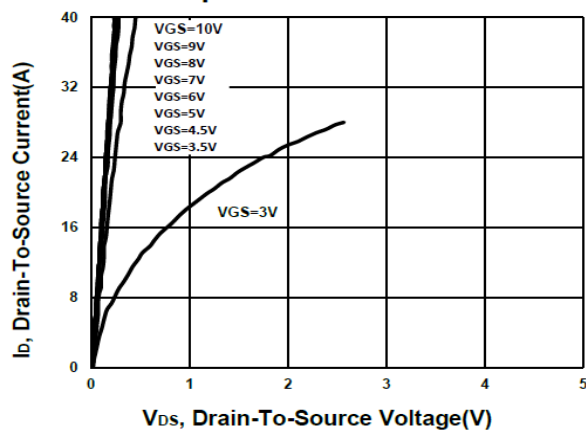
¹Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

²Independent of operating temperature.

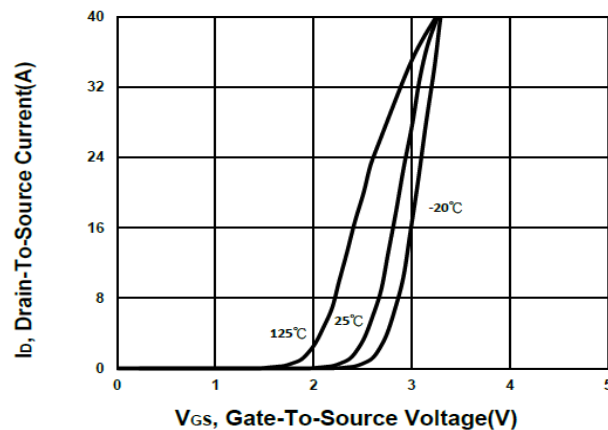
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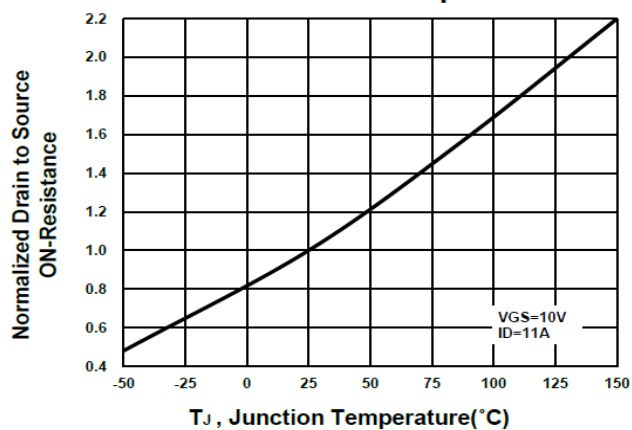
Output Characteristics



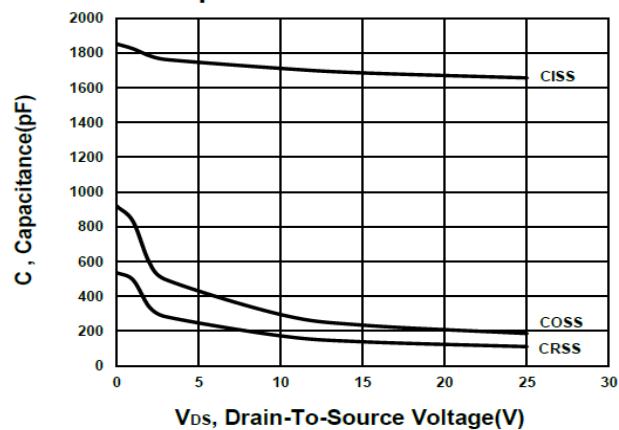
Transfer Characteristics



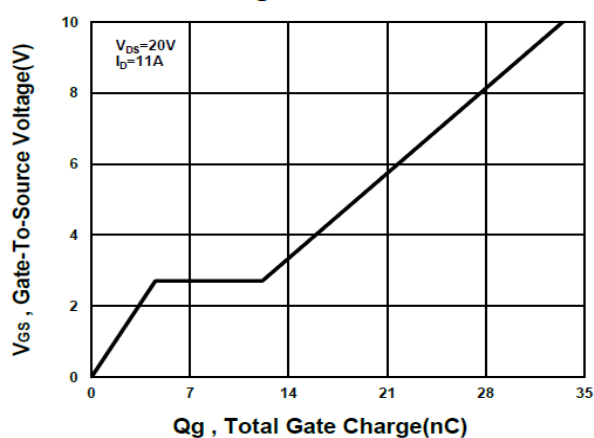
On-Resistance VS Temperature



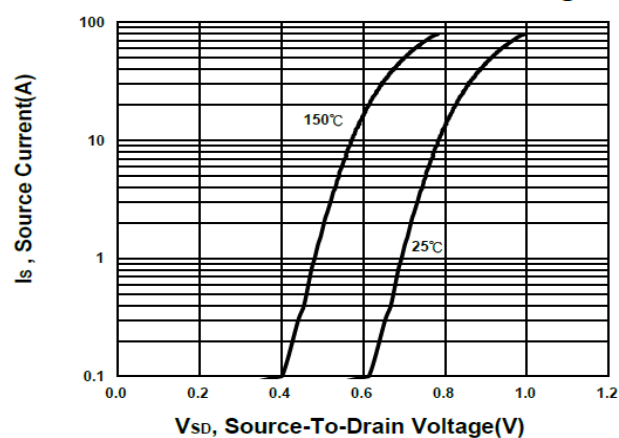
Capacitance Characteristic



Gate charge Characteristics



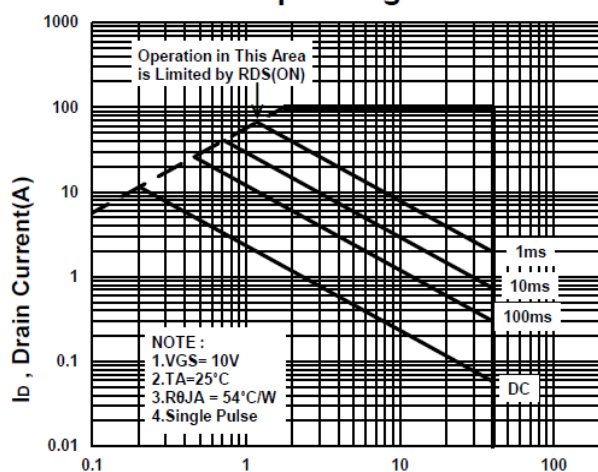
Source-Drain Diode Forward Voltage



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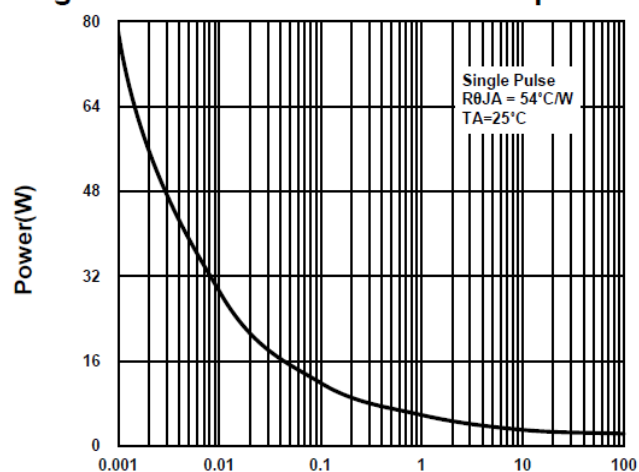
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Safe Operating Area



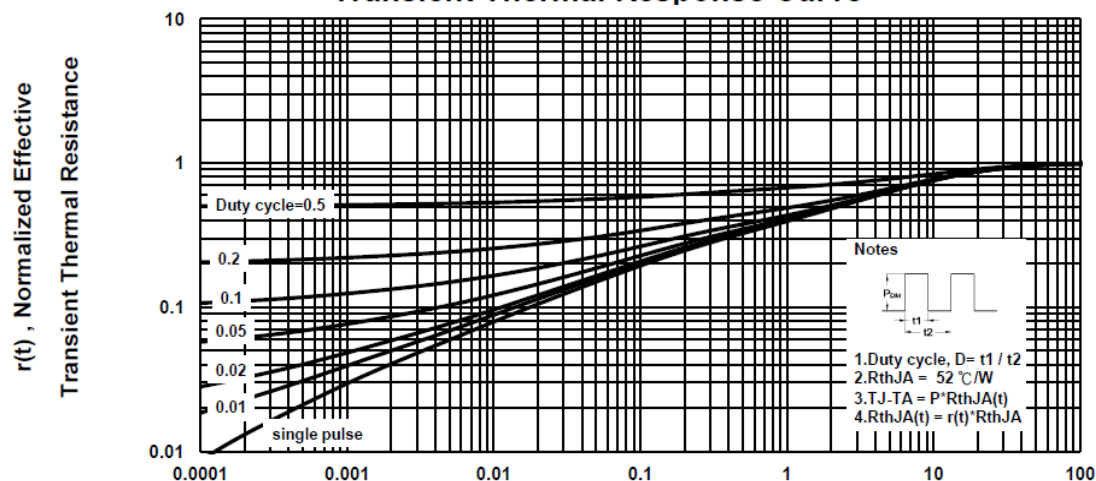
V_{DS} , Drain-To-Source Voltage(V)

Single Pulse Maximum Power Dissipation



Single Pulse Time(s)

Transient Thermal Response Curve



T_1 , Square Wave Pulse Duration[sec]

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PDFN 5x6P MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	4.8		5.15	J	3.33		3.78
B	5.44		5.9	K	0.9		
C	5.9		6.35	L	0.35		0.712
D	0.33		0.51	M	0°		12°
E		1.27		N	4.8		5.5
F	0.8		1.25	O	0.05		0.3
G	0.15		0.34	P	0.06		0.2
H	3.61		4.31	S	3.69		4.19
I	0.35		0.71				

