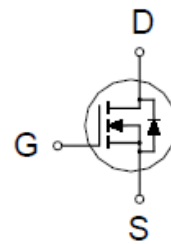


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N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
30V	5.8m Ω @ $V_{GS} = 10V$	56A



ABSOLUTE MAXIMUM RATINGS ($T_A = 25\text{ }^\circ\text{C}$ 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 ^{1,2}	$T_C = 25\text{ }^\circ\text{C}$	I_D	56	A
	$T_C = 100\text{ }^\circ\text{C}$		35	
	$T_A = 25\text{ }^\circ\text{C}$		14.5	
	$T_A = 70\text{ }^\circ\text{C}$		11.6	
Pulsed Drain Current ¹		I_{DM}	100	
Avalanche Current		I_{AS}	38	
Avalanche Energy	$L = 0.1\text{mH}$	E_{AS}	72	mJ
Power Dissipation	$T_C = 25\text{ }^\circ\text{C}$	P_D	31	W
	$T_C = 100\text{ }^\circ\text{C}$		12	
	$T_A = 25\text{ }^\circ\text{C}$		2.1	
	$T_A = 70\text{ }^\circ\text{C}$		1.3	
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^\circ\text{C}$

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THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient ³	$R_{\theta JA}$		60	°C / W
Junction-to-Case	$R_{\theta JC}$		3.5	

¹Pulse width limited by maximum junction temperature.

²Package limitation current is 27A.

³The 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 $T_A=25^{\circ}\text{C}$. The value in any given application depends on the user's specific board design.

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	1.7	2.5	
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
		$V_{DS} = 20V, V_{GS} = 0V, T_J = 55^{\circ}\text{C}$			10	
On-State Drain Current ¹	$I_{D(ON)}$	$V_{DS} = 5V, V_{GS} = 10V$	100			A
Drain-Source On-State Resistance ¹	$R_{DS(ON)}$	$V_{GS} = 4.5V, I_D = 20A$		8.8	10	m Ω
		$V_{GS} = 10V, I_D = 20A$		5.4	5.8	
Forward Transconductance ¹	g_{fs}	$V_{DS} = 5V, I_D = 20A$		68		S
DYNAMIC						
Input Capacitance	C_{iss}	$V_{GS} = 0V, V_{DS} = 15V, f = 1\text{MHz}$		1540		pF
Output Capacitance	C_{oss}			256		
Reverse Transfer Capacitance	C_{rss}			207		
Gate Resistance	R_g	$V_{GS} = 0V, V_{DS} = 0V, f = 1\text{MHz}$		1.6		Ω
Total Gate Charge ²	$Q_{g(VGS=10V)}$	$V_{DS} = 0.5V_{(BR)DSS}, I_D = 20A, V_{GS}=10V$		35.3		nC
	$Q_{g(VGS=4.5V)}$			18.2		
Gate-Source Charge ²	Q_{gs}			6.4		
Gate-Drain Charge ²	Q_{gd}			9.5		
Turn-On Delay Time ²	$t_{d(on)}$		$V_{DS} = 0.5V_{(BR)DSS}, I_D \cong 20A, V_{GS} = 10V, R_{GEN} = 6\Omega$		31	
Rise Time ²	t_r			18		
Turn-Off Delay Time ²	$t_{d(off)}$			56		
Fall Time ²	t_f			12		

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SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS						
Continuous Current ³	I_S				56	A
Diode Forward Voltage ¹	V_{SD}	$I_S = 20A, V_{GS} = 0V$			1.3	V
Reverse Recovery Time	t_{rr}	$I_F = 20A, di_F/dt = 100A / \mu S$			21	nS
Reverse Recovery Charge	Q_{rr}				8	nC

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

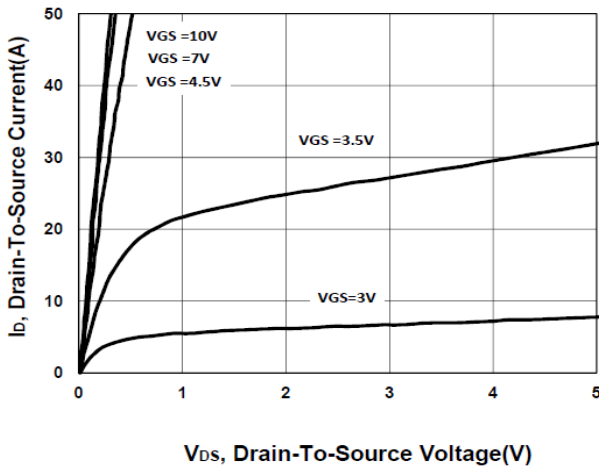
²Independent of operating temperature.

³Package limitation current is 27A.

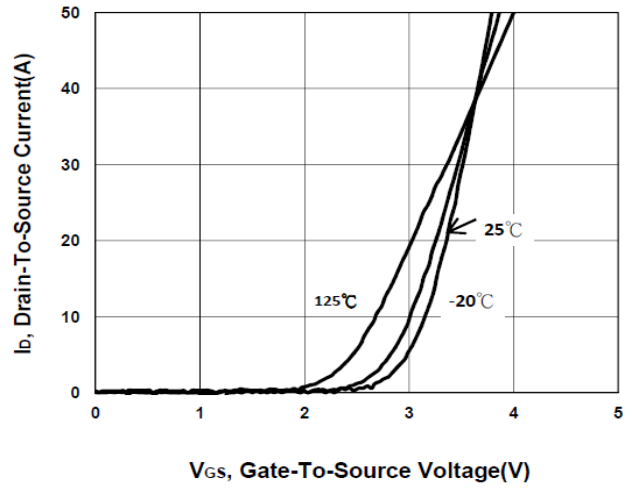
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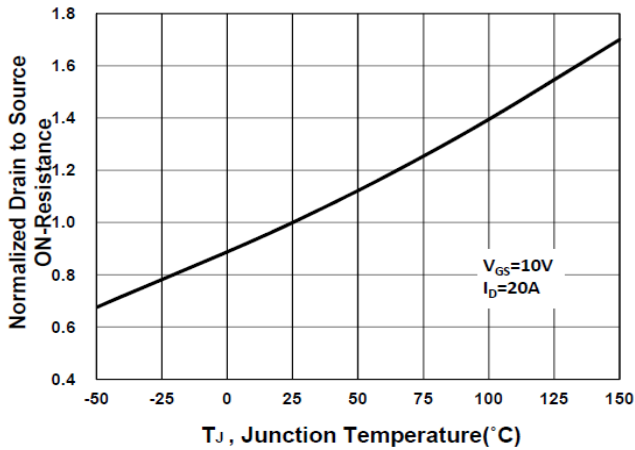
Output Characteristics



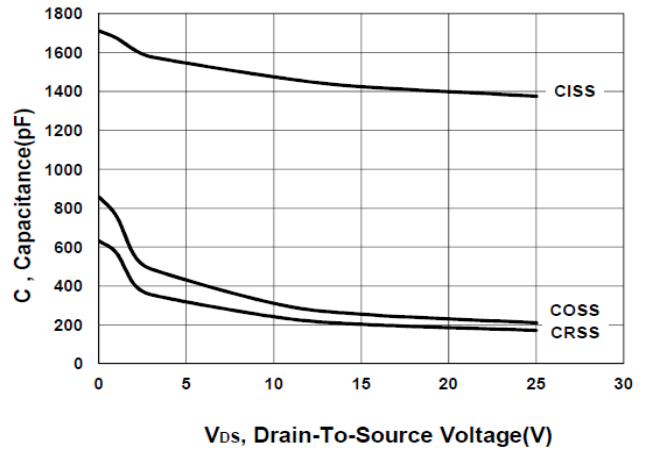
Transfer Characteristics



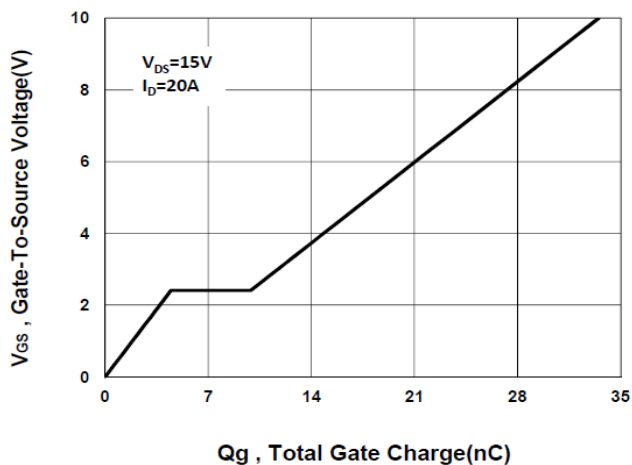
On-Resistance VS Temperature



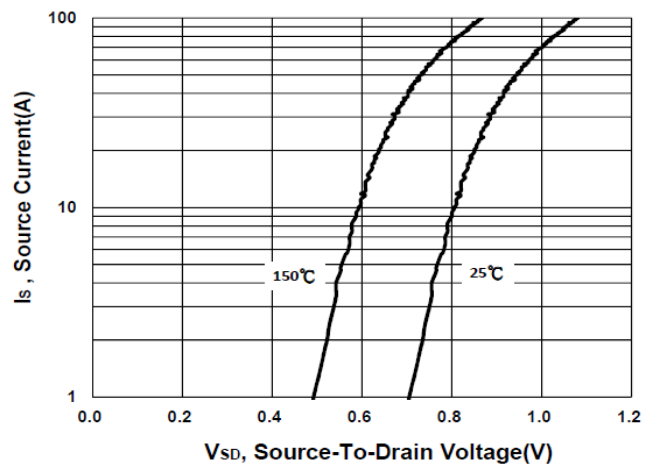
Capacitance Characteristic



Gate charge Characteristics



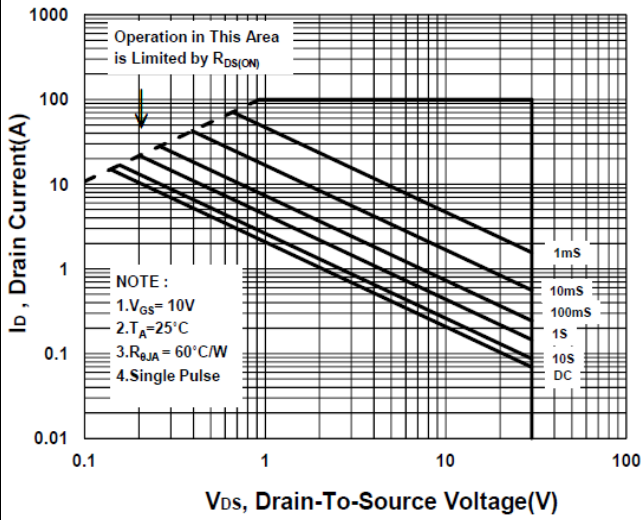
Source-Drain Diode Forward Voltage



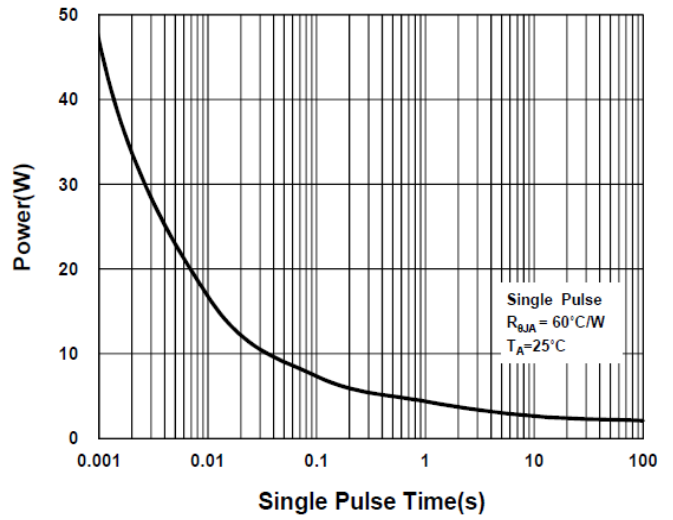
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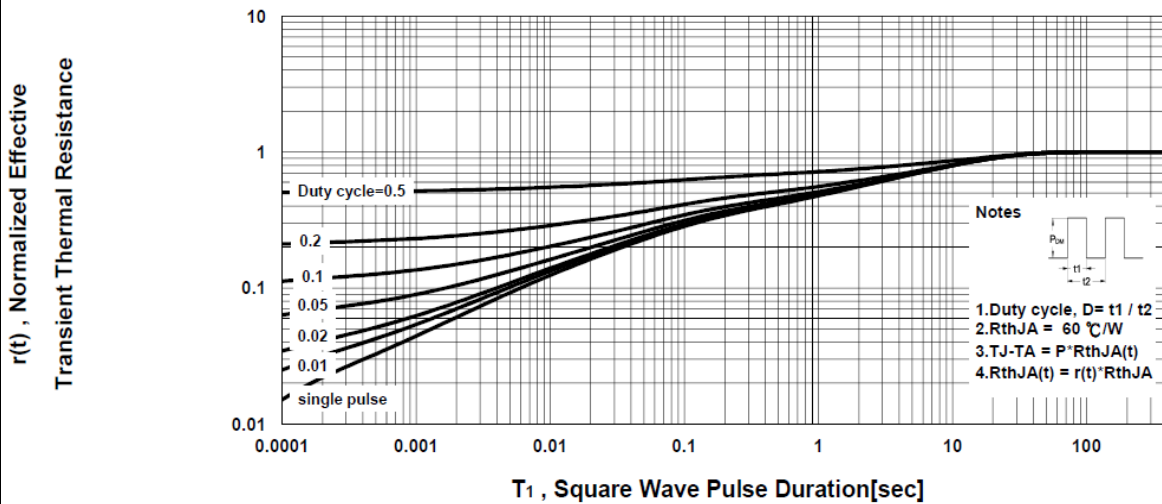
Safe Operating Area



Single Pulse Maximum Power Dissipation



Transient Thermal Response Curve



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Package Dimension

PDFN 3x3P MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	3		3.6	I	0.7		1.12
B	2.88		3.2	J	0.1		0.33
C	2.9		3.2	K	0.6		
D	1.98		2.69	L	0°	10°	12°
E	3		3.6	M	0.14		0.41
F	0		0.455	N	0.6		0.7
G	1.47		2.2	O	0.12		0.36
H	0.15		0.56	P	0		0.2

