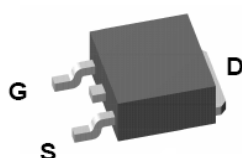


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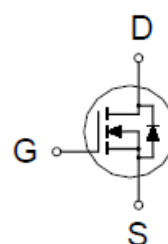
N-Channel Enhancement Mode MOSFET

PRODUCT SUMMARY

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



TO-252



ABSOLUTE MAXIMUM RATINGS ($T_C = 25\text{ }^{\circ}\text{C}$ 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	40	A
	$T_C = 100\text{ }^{\circ}\text{C}$		25	
Pulsed Drain Current ¹		I_{DM}	85	
Avalanche Current		I_{AS}	22	
Avalanche Energy	$L = 0.3\text{mH}$	E_{AS}	72	mJ
Power Dissipation	$T_C = 25\text{ }^{\circ}\text{C}$	P_D	42	W
	$T_C = 100\text{ }^{\circ}\text{C}$		17	
Operating Junction & Storage Temperature Range		T_J, T_{STG}	-55 to 150	$^{\circ}\text{C}$
Lead Temperature(¹ / ₁₆ " from case for 10 sec.)		T_L	275	$^{\circ}\text{C}$

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Case	$R_{\theta JC}$		3	$^{\circ}\text{C} / \text{W}$
Junction-to-Ambient	$R_{\theta JA}$		75	

¹Pulse width limited by maximum junction temperature.

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

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNIT
			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	1.7	2	3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0V, V _{GS} = ±20V			±250	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = 32V, V _{GS} = 0V			1	μA
		V _{DS} = 30V, V _{GS} = 0V , T _C = 125 °C			10	
On-State Drain Current ¹	I _{D(ON)}	V _{DS} = 10V, V _{GS} = 10V	85			A
Drain-Source On-State Resistance ¹	R _{DS(ON)}	V _{GS} = 7V, I _D = 10A		18	27	mΩ
		V _{GS} = 10V, I _D = 20A		12.5	15	
Forward Transconductance ¹	g _{fs}	V _{DS} = 10V, I _D = 20A		25		S
DYNAMIC						
Input Capacitance	C _{iss}	V _{GS} = 0V, V _{DS} = 10V, f = 1MHz		1145		pF
Output Capacitance	C _{oss}			255		
Reverse Transfer Capacitance	C _{rss}			95		
Total Gate Charge ²	Q _g	V _{DS} = 0.5V _{(BR)DSS} , V _{GS} = 10V, I _D = 10A		23		nC
Gate-Source Charge ²	Q _{gs}			3.6		
Gate-Drain Charge ²	Q _{gd}			3		
Turn-On Delay Time ²	t _{d(on)}	V _{DS} = 20V, R _L = 1Ω I _D ≅ 1A, V _{GS} = 10V, R _{GEN} = 6 Ω		3.2		nS
Rise Time ²	t _r			10.8		
Turn-Off Delay Time ²	t _{d(off)}			17.1		
Fall Time ²	t _f			5.3		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T _C = 25 °C)						
Continuous Current	I _S				32	A
Forward Voltage ¹	V _{SD}	I _F = I _S , V _{GS} = 0V			1.3	V
Reverse Recovery Time	t _{rr}	I _F = I _S , dI _F /dt = 100A / μS		60		nS
Reverse Recovery Charge	Q _{rr}			43		nC

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

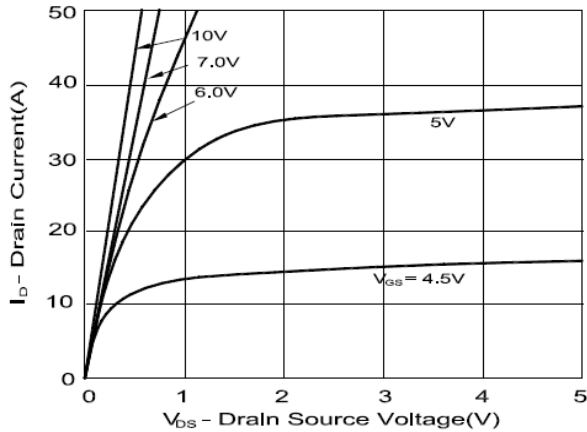
²Independent of operating temperature.

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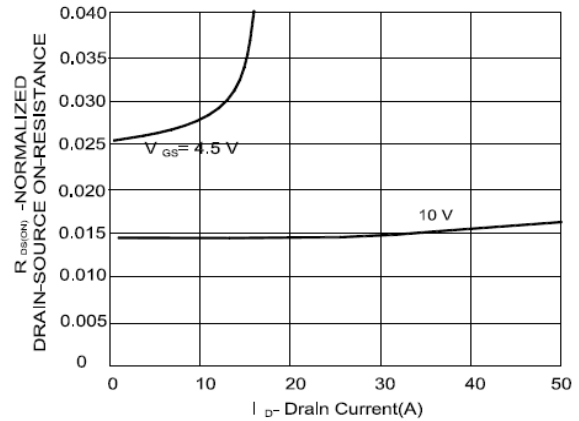
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TYPICAL PERFORMANCE CHARACTERISTICS

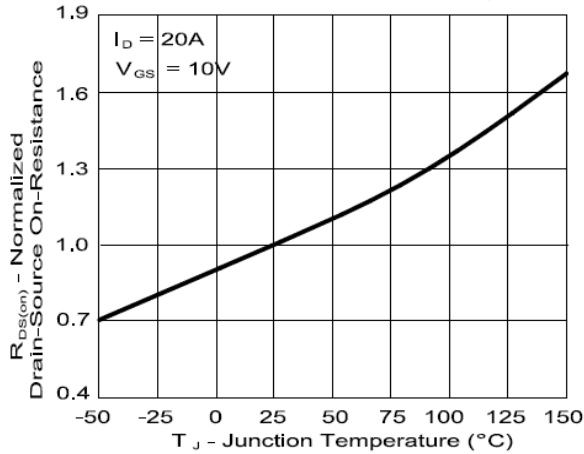
On-Region Characteristics



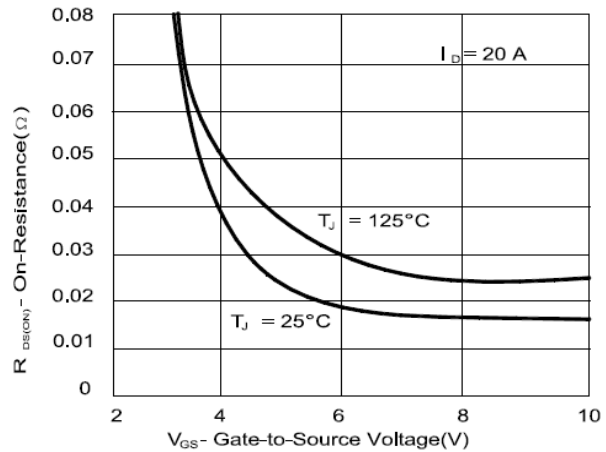
On-Resistance Variation with Drain Current and Gate Voltage



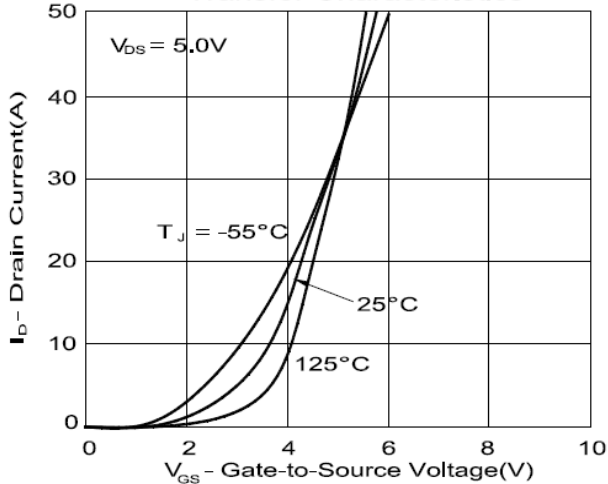
On-Resistance Variation with Temperature



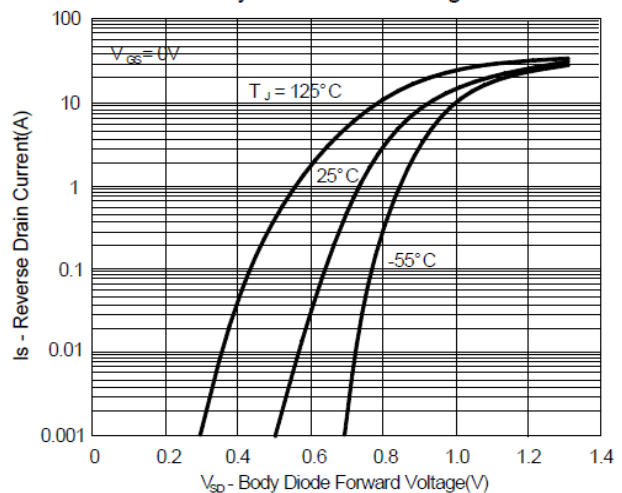
On-Resistance Variation with Gate-to-Source Voltage



Transfer Characteristics

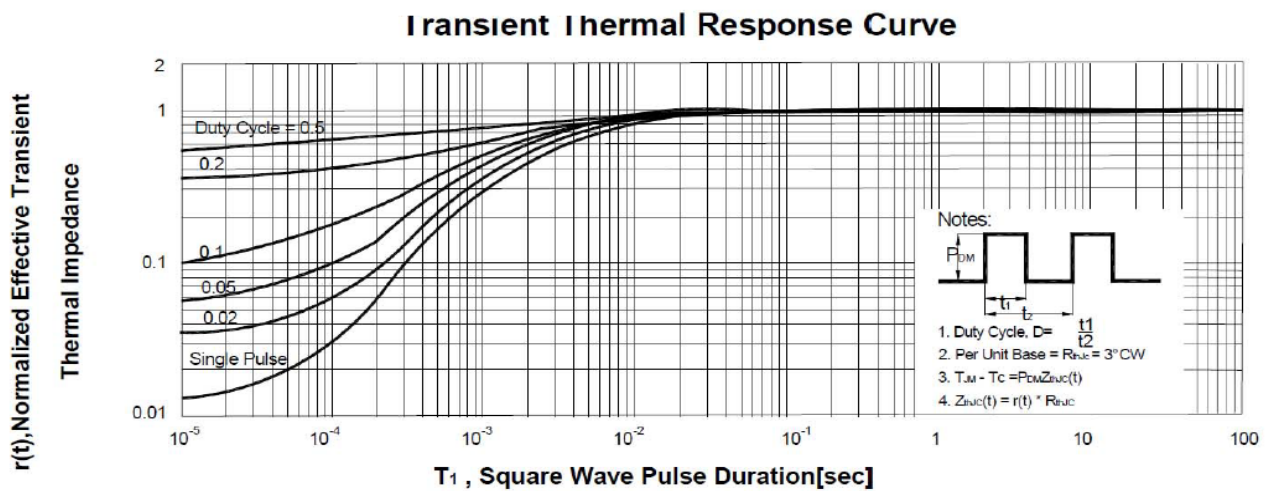
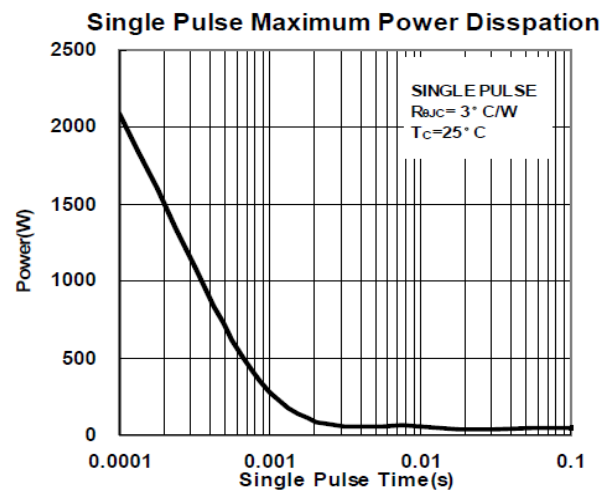
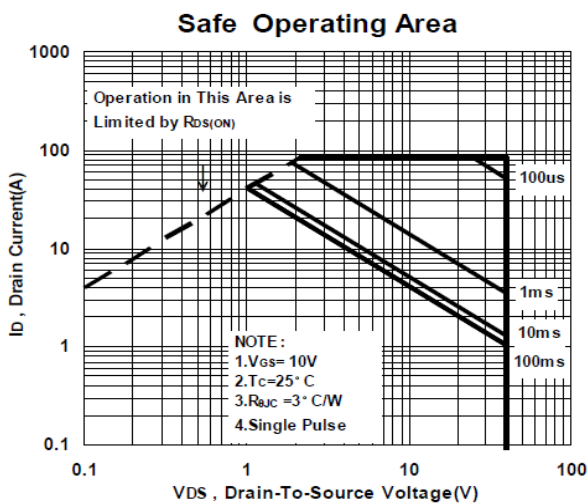
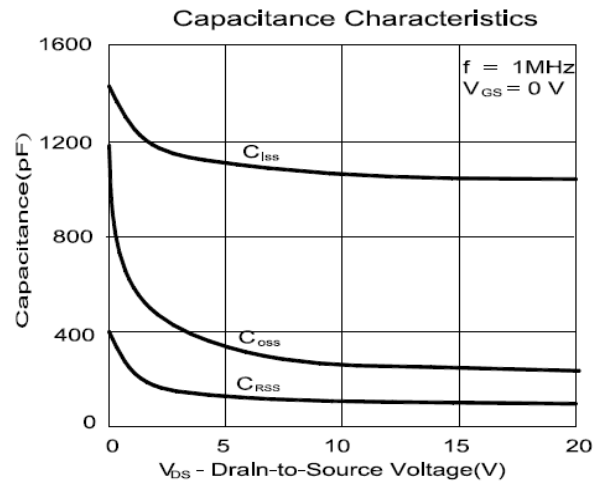
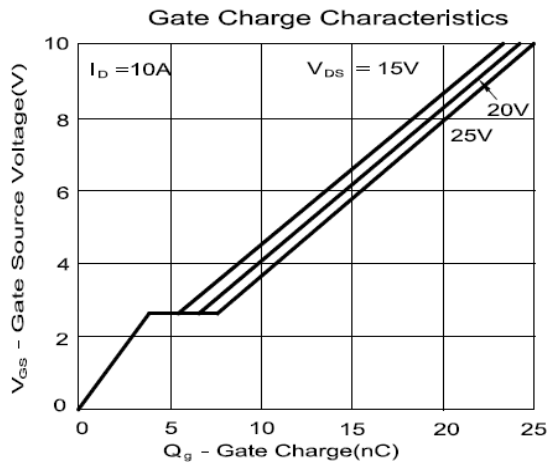


Body Diode Forward Voltage



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Package Dimension

TO-252 (DPAK) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	8.9	10	10.41	J	4.8		5.64
B	2.1	2.2	2.5	K	0.15		1.49
C	0.4	0.5	0.61	L	0.4	0.76	0.91
D	0.82	1.2	1.5	M	4.2	4.58	5
E	0.35	0.5	0.65	S	4.57	5.1	5.52
F	0		0.2	T	3.81	4.75	5.24
G	5.3	6.1	6.3	U	1.4		1.78
H	0.5		1.7	V	0.55	1.25	1.7
I	6.3	6.5	6.8				

