



N-Channel Enhancement Mode Field Effect Transistor

Product Summary

- V_{DS} 60 V
- I_D 50 A
- $R_{DS(ON)}$ (at $V_{GS}=10V$) <15 mohm
- $R_{DS(ON)}$ (at $V_{GS}=4.5V$) <17 mohm
- 100% EAS Tested



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■ Electrical Characteristics (T_J=25°C unless otherwise noted)

Parameter	Symbol	Conditions	Min	Typ	Max	Units
Static Parameter						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} = 0V, I _D =250μA	60			V
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =60V, V _{GS} =0V			1	μA
Gate-Body Leakage Current	I _{GSS}	V _{GS} = ±20V, V _{DS} =0V			±100	nA
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D =250μA	1.0	1.5	2.5	V
Static Drain-Source On-Resistance	R _{DS(on)}	V _{GS} = 10V, I _D =15A		11	15	mΩ
		V _{GS} = 4.5V, I _D =10A		13.5	17	
Diode Forward Voltage	V _{SD}	I _S =15A, V _{GS} =0V		0.80	1.2	V
Maximum Body-Diode Continuous Current	I _S				50	A
Gate resistance	R _g	f=1 MHz, Open drain		2.1		Ω
Dynamic Parameters						
Input Capacitance	C _{iss}	V _{DS} =30V, V _{GS} =0V, f=1MHZ		2585		pF
Output Capacitance	C _{oss}			150		
Reverse Transfer Capacitance	C _{rss}			77.5		
Switching Parameters						
Total Gate Charge	Q _g (10V)	V _{GS} =10V, V _{DS} =30V, I _D =20A		51		nC
Total Gate Charge	Q _g (4.5V)			24		
Gate-Source Charge	Q _{gs}			9.5		
Gate-Drain Charge	Q _{gd}			10		
Reverse Recovery Charge	Q _{rr}	I _r =20A, di/dt=100A/us		17		
Reverse Recovery Time	t _{rr}			14		
Turn-on Delay Time	t _{D(on)}	V _{GS} =10V, V _{DD} =30V, I _D =20A R _{GEN} =3Ω		11		ns
Turn-on Rise Time	t _r			25		
Turn-off Delay Time	t _{D(off)}			89		
Turn-off fall Time	t _f			79		

A. Pulse Test: Pulse Width ≤ 300us, Duty cycle ≤ 2%.

B. The power dissipation P_D is based on T_{J(MAX)}=150°C, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

C. The value of R_{θJA} is measured with the device mounted on 1in2 FR-4 board with 2oz. Copper, in a still air environment with T_A=25°C.

D. T_J=25°C, V_{DD}=55V, V_G=10V, L=0.5mH.



Typical Performance Characteristics

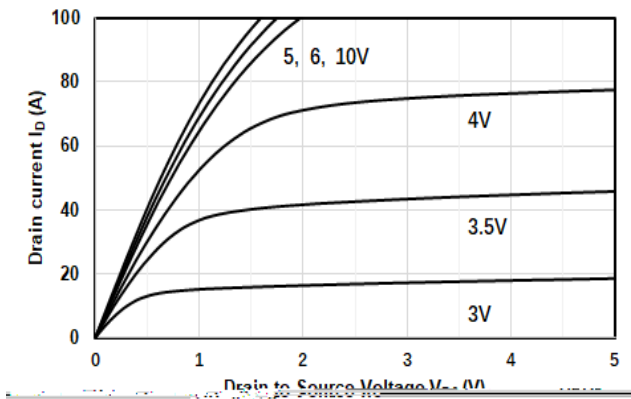


Figure1. Output Characteristics

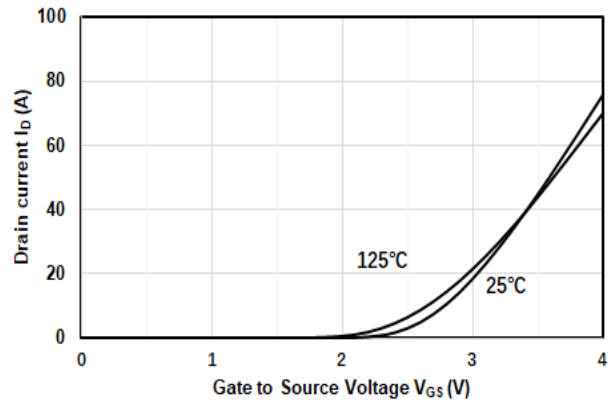


Figure2. Transfer Characteristics

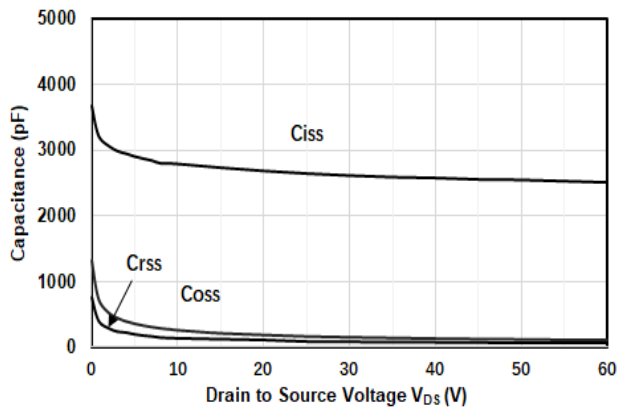


Figure3. Capacitance Characteristics

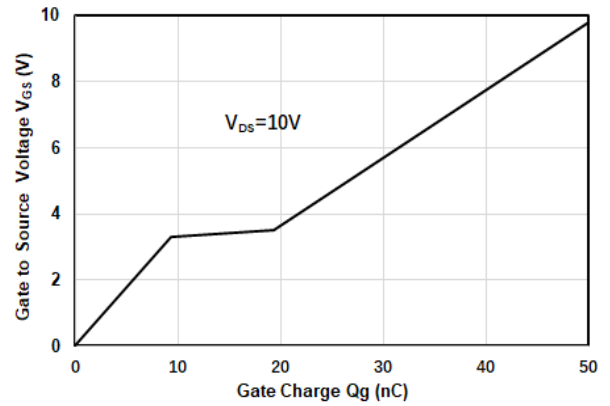


Figure4. Gate Charge

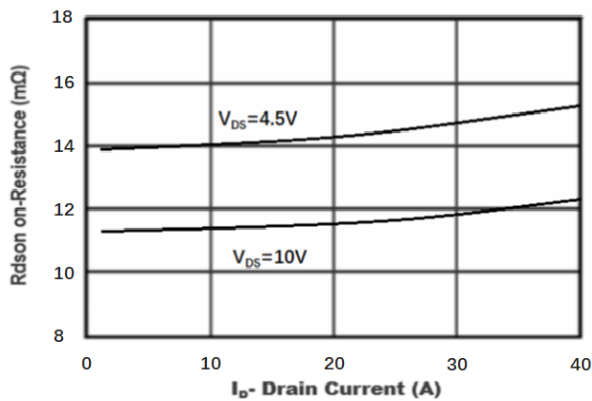


Figure5. Drain-Source on Resistance

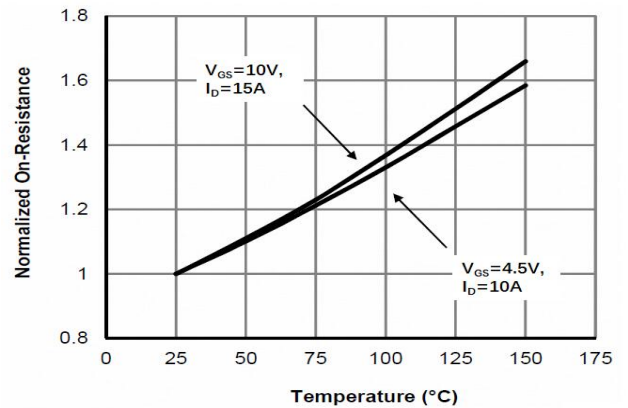


Figure6. Drain-Source on Resistance



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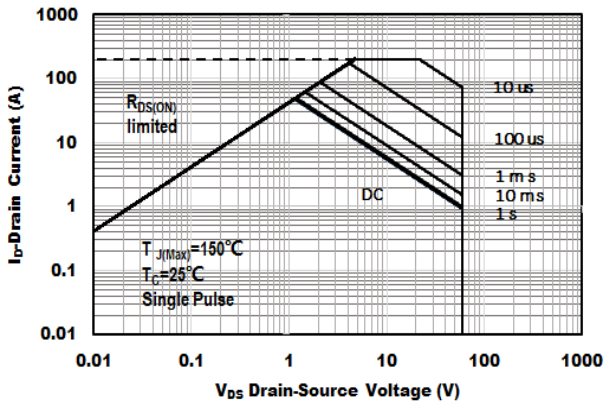


Figure7. Safe Operation Area

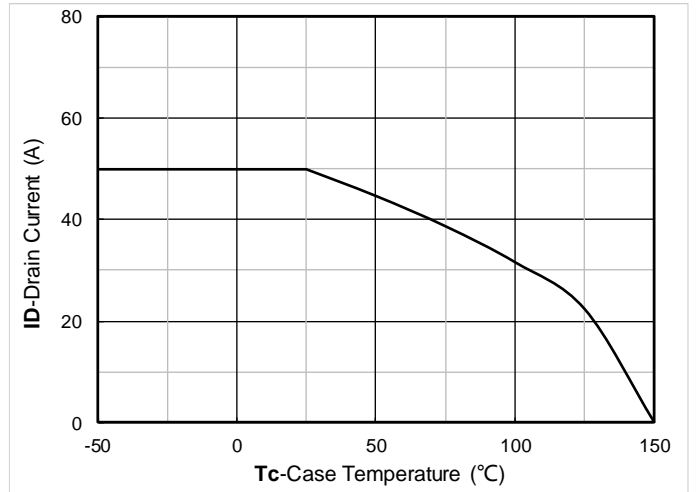


Figure8. Drain current vs. Case Temperature

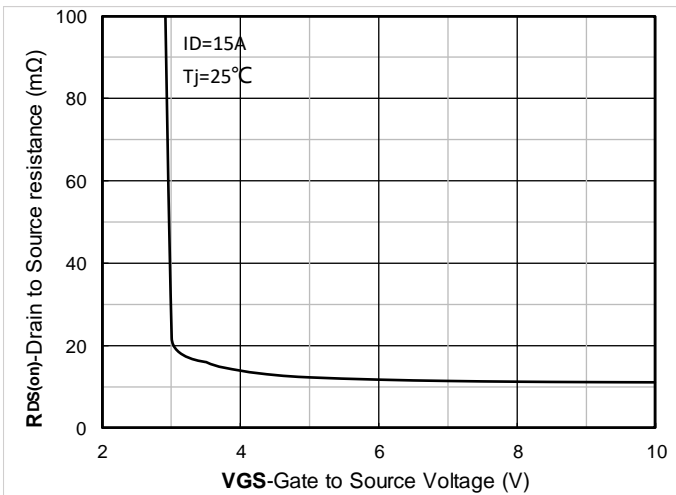


Figure 9. On-Resistance vs Gate to Source Voltage

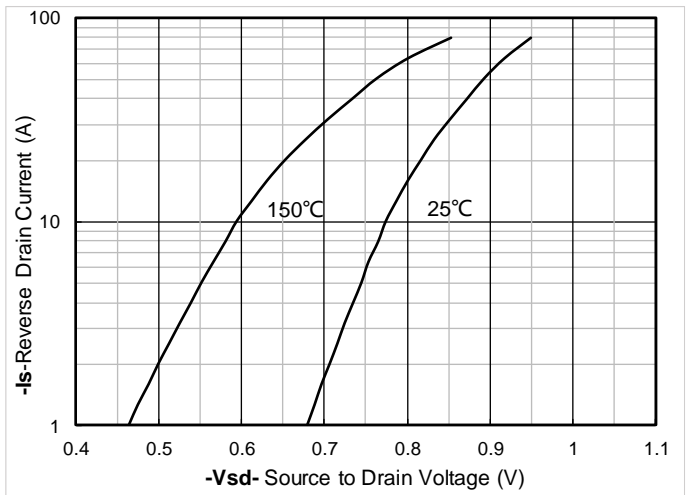


Figure 10. Forward characteristics of reverse diode

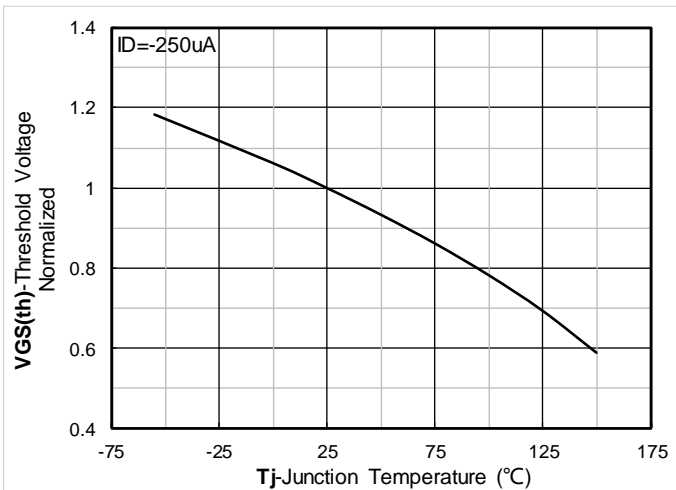


Figure 11. Normalized Threshold voltage

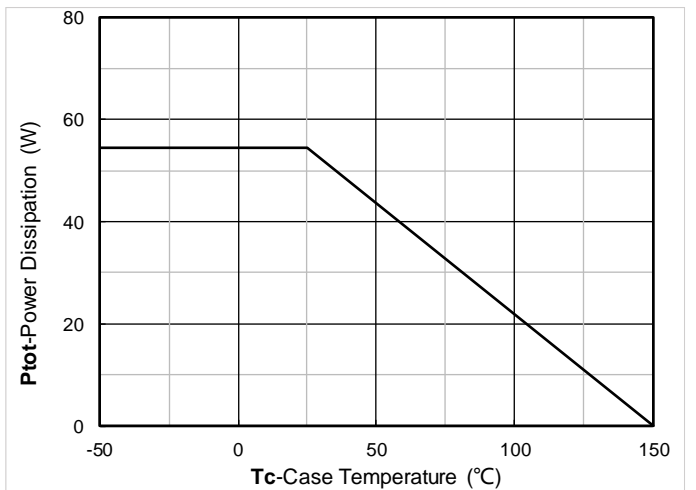


Figure 12. Power dissipation



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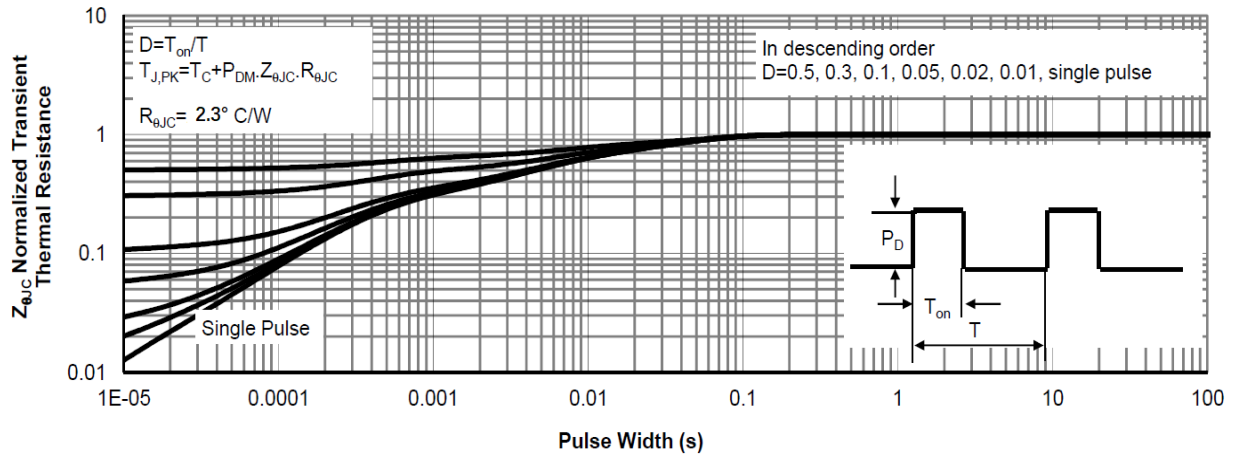
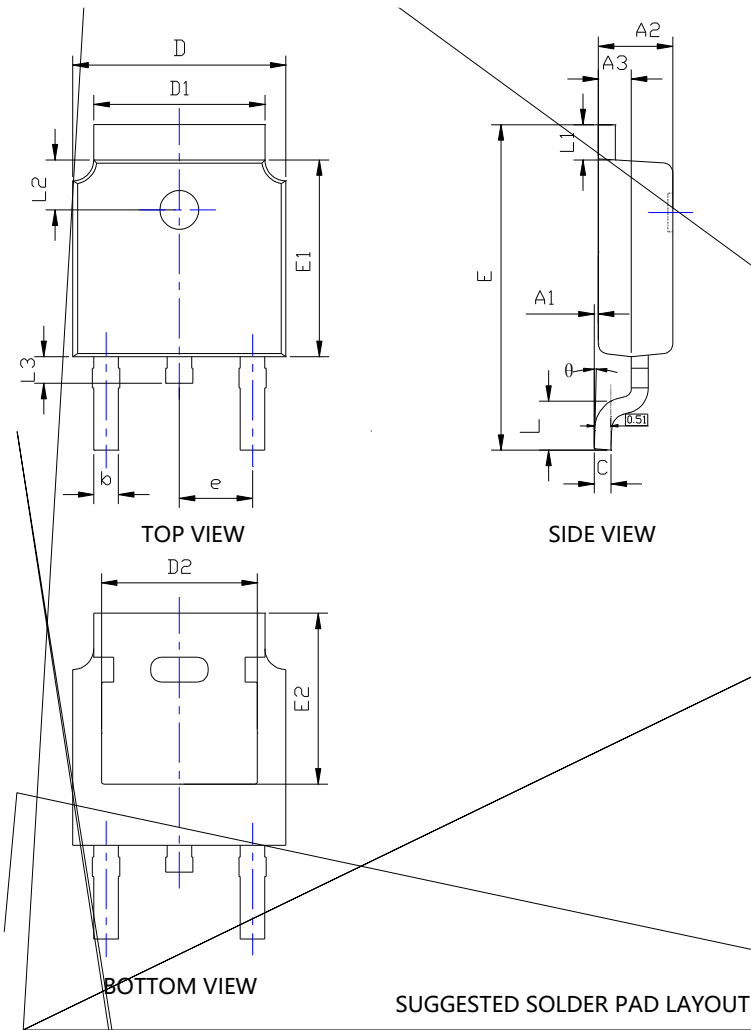


Figure13. Normalized Maximum Transient Thermal Impedance



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TO-252-B Package information



SYMBOL	DIMENSIONS					
	INCHES			Millimeter		
	MIN.	NOM.	MAX.	MIN.	NOM.	MAX.
A1	0.000	---	0.008	0.000	---	0.200
A2	0.087	0.091	0.094	2.200	2.300	2.400
A3	0.035	0.039	0.043	0.900	1.000	1.100
b	0.026	0.030	0.034	0.660	0.760	0.860
c	0.018	0.020	0.023	0.460	0.520	0.580
D	0.256	0.260	0.264	6.500	6.600	6.700
D1	0.203	0.209	0.215	5.150	5.300	5.450
D2	0.181	0.189	0.195	4.600	4.800	4.950
E	0.390	0.398	0.406	9.900	10.100	10.300
E1	0.236	0.240	0.244	6.000	6.100	6.200
E2	0.203	0.209	0.215	5.150	5.300	5.450
e	0.090BSC			2.286BSC		
L	0.049	0.059	0.069	1.250	1.500	1.750
L1	0.03					
L2	0.055		0.075	1.400		1.900
L3	0.240	0.310	0.039	0.600		1.000
L4	0.114REF					
θ	0°		10°	0°		10°

NOTE:
 1. PACKAGE BODY SIZES EXCLUDE MOLD FLASH AND GATE BURRS.
 2. TOLERANCE 0.1mm UNLESS OTHERWISE SPECIFIED.
 3. THE PAD LAYOUT IS FOR REFERENCE PURPOSES ONLY.



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