

N-Channel 60 V (D-S) MOSFET

PRODUCT SUMMARY

V _{DS} (V)	R _{DS(on)} (mΩ)(Typ.)	I _D (A) ^a	Q _g (Typ.)
60	3.8 at V _{GS} = 10 V	80	95.7 nC

FEATURES

- 175 °C Junction Temperature
- DT-Trench Power MOSFET

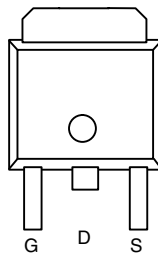


RoHS
COMPLIANT

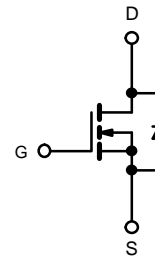
APPLICATIONS

- Notebook PC Core
- VRM/POL

TO-252



Top View



N-Channel MOSFET

ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C, unless otherwise noted)

Parameter	Symbol	Limit	Unit
Drain-Source Voltage	V _{DS}	60	V
Gate-Source Voltage	V _{GS}	± 20	
Continuous Drain Current (T _J = 175 °C)	T _C = 25 °C	I _D	80 ^{b, c}
	T _C = 70 °C		70 ^{b, c}
Pulsed Drain Current	I _{DM}	240	A
Avalanche Current Pulse	I _{AS}	85	
Single Pulse Avalanche Energy	E _{AS}	250	mJ
Continuous Source-Drain Diode Current	I _S	80 ^a	A
Maximum Power Dissipation	T _C = 25 °C	P _D	180 ^{b, c}
	T _C = 70 °C		93 ^{b, c}
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 55 to 175	°C

THERMAL RESISTANCE RATINGS

Parameter	Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^b	R _{thJA}	11	15	°C/W
Maximum Junction-to-Case	R _{thJC}	0.75	1.0	

Notes:

a. Based on T_C = 25 °C.

b. Surface mounted on 1" x 1" FR4 board.

c. t = 10 s.

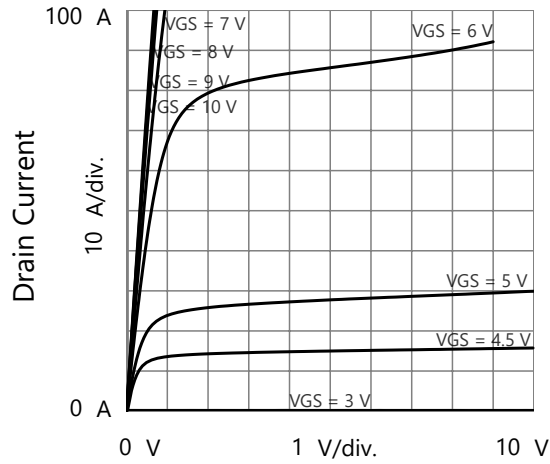
SPECIFICATIONS ($T_J = 25\text{ }^\circ\text{C}$, unless otherwise noted)							
Parameter	Symbol	Test Conditions	Min .	Typ.	Max.	Unit	
Static							
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0\text{ V}, I_D = 250\text{ }\mu\text{A}$	60			V	
Gate-Source Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}, I_D = 250\text{ }\mu\text{A}$	2		3	V	
Gate-Source Leakage	I_{GSS}	$V_{DS} = 0\text{ V}, V_{GS} = \pm 20\text{ V}$			± 100	nA	
Zero Gate Voltage Drain Current	I_{DSS}	$V_{DS} = 60\text{ V}, V_{GS} = 0\text{ V}$			1	μA	
		$V_{DS} = 60\text{ V}, V_{GS} = 0\text{ V}, T_J = 55\text{ }^\circ\text{C}$			10		
On-State Drain Current ^a	$I_{D(on)}$	$V_{DS} \geq 5\text{ V}, V_{GS} = 10\text{ V}$	100			A	
Drain-Source On-State Resistance ^a	$R_{DS(on)}$	$V_{GS} = 10\text{ V}, I_D = 10\text{ A}$		3.8	4.9	m Ω	
Forward Transconductance ^a	g_{fs}	$V_{DS} = 15\text{ V}, I_D = 10\text{ A}$		80		S	
Dynamic^b							
Input Capacitance	C_{iss}	$V_{DS} = 30\text{ V}, V_{GS} = 0\text{ V}, f = 1\text{ MHz}$		5010		μF	
Output Capacitance	C_{oss}				398		
Reverse Transfer Capacitance	C_{rss}				337		
Total Gate Charge	Q_g	$V_{DS} = 30\text{ V}, V_{GS} = 10\text{ V}, I_D = 10\text{ A}$		95.7		nC	
Gate-Source Charge	Q_{gs}				17		
Gate-Drain Charge	Q_{gd}				24.5		
Gate Resistance	R_g	$f = 1\text{ MHz}$		1.37		Ω	
Turn-On Delay Time	$t_{d(on)}$	$V_{DD} = 30\text{ V}, R_L = 0.6\text{ }\Omega$ $I_D \cong 10\text{ A}, V_{GEN} = 10\text{ V}, R_g = 2.5\text{ }\Omega$		18		ns	
Rise Time	t_r				20		
Turn-Off Delay Time	$t_{d(off)}$				25		
Fall Time	t_f				10		
Drain-Source Body Diode Characteristics							
Continuous Source-Drain Diode Current	I_S	$T_C = 25\text{ }^\circ\text{C}$			80	A	
Pulse Diode Forward Current ^a	I_{SM}				240		
Body Diode Voltage	V_{SD}	$I_S = 1\text{ A}$		0.6	1	V	
Body Diode Reverse Recovery Time	t_{rr}	$I_F = 10\text{ A}, di/dt = 100\text{ A}/\mu\text{s}, T_J = 25\text{ }^\circ\text{C}$		30		ns	
Body Diode Reverse Recovery Charge	Q_{rr}				80		nC

Notes:

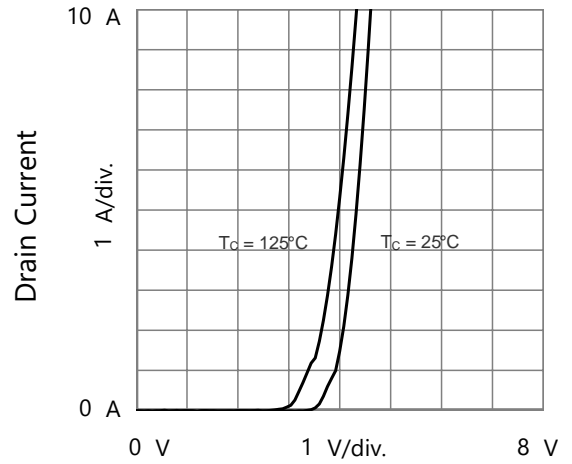
- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
 b. Guaranteed by design, not subject to production testing.

Stresses beyond those listed under "Absolute Maximum Ratings" may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated in the operational sections of the specifications is not implied. Exposure to absolute maximum rating conditions for extended periods may affect device reliability.

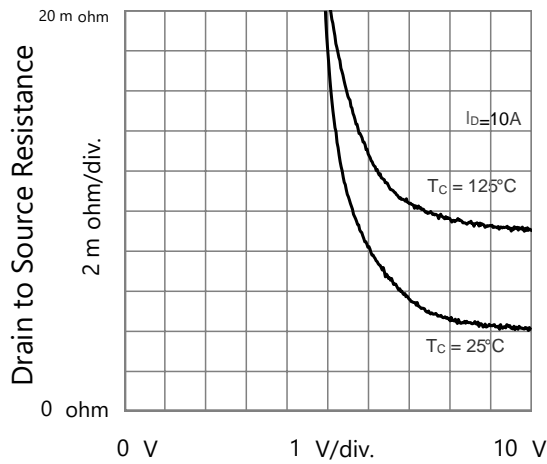
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



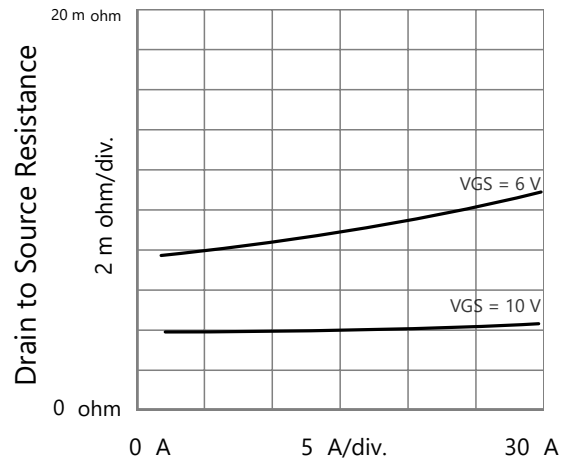
Drain to Source Voltage
Output Characteristics



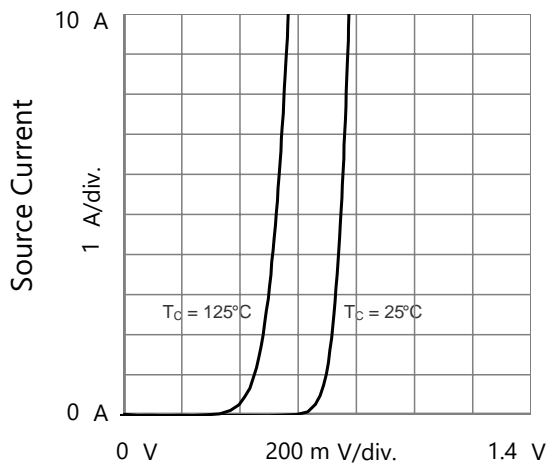
Gate to Source Voltage
Transfer Characteristics



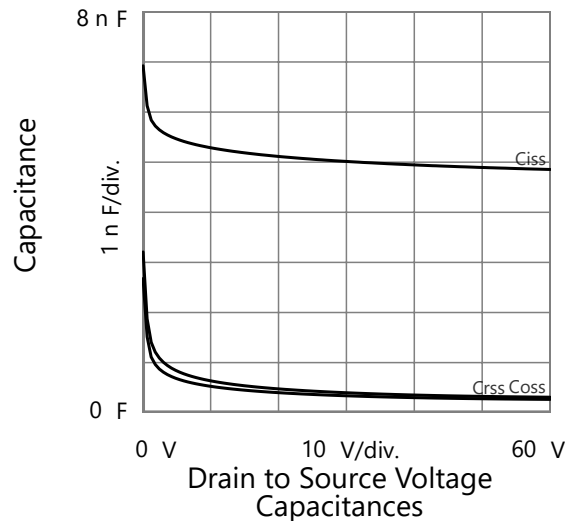
Gate to Source Voltage
Drain to Source Resistance vs. Gate to Source Voltage



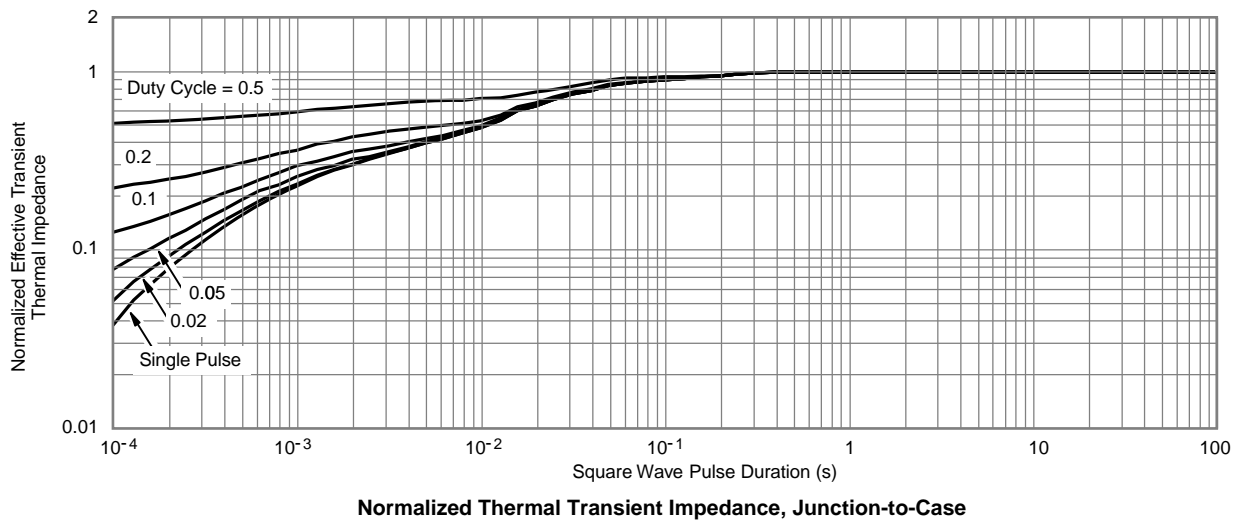
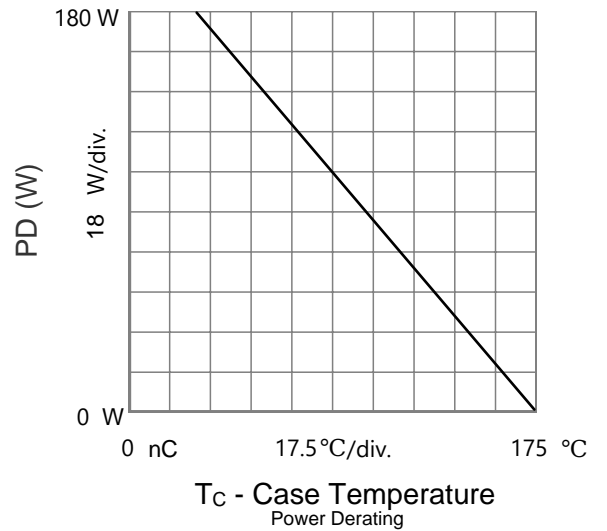
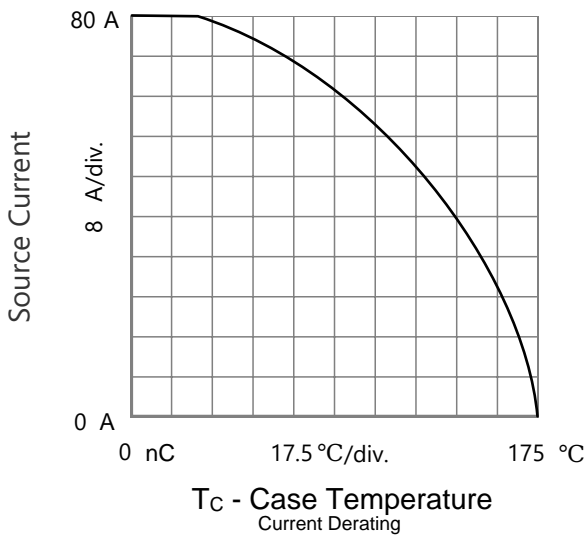
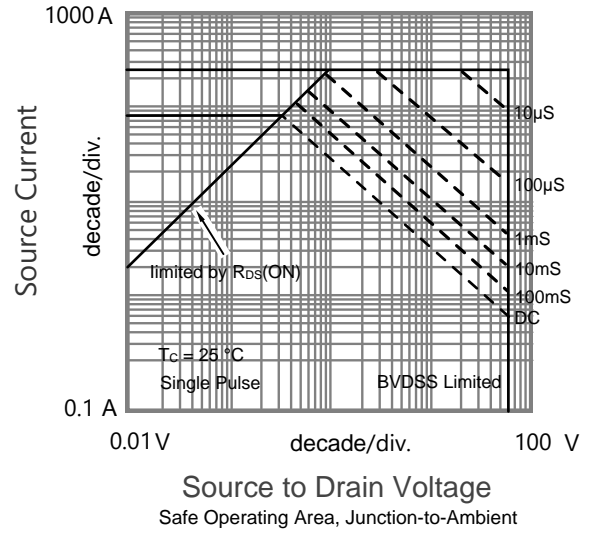
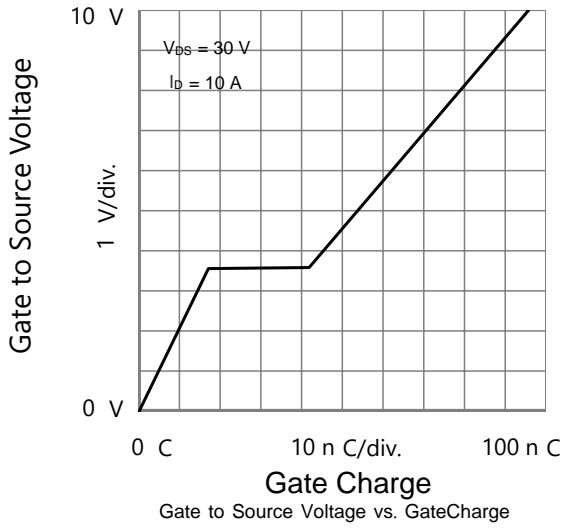
Drain Current
Drain to Source Resistance vs. Drain Current



Source to Drain Voltage
Body Diode Forward Characteristics



TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



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