

P-Channel 70-V (D-S) MOSFET

PRODUCT SUMMARY

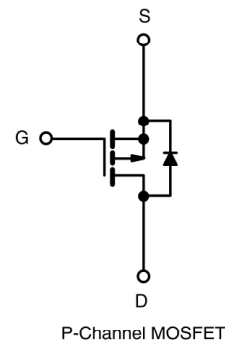
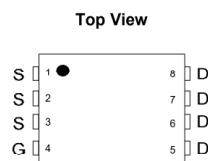
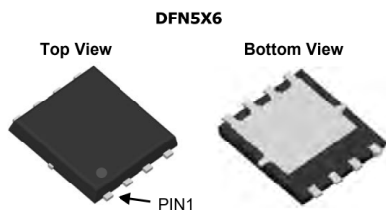
V_{DS} (V)	$R_{DS(on)}$ (m Ω)(TYP.)	I_D (A)(MAX.)
-70	6 at $V_{GS} = -10$ V	-95
	10 at $V_{GS} = -4.5$ V	

FEATURES

- DT-Trench Power MOSFET
- 100 % R_g and UIS Tested

APPLICATIONS

- Notebook
- Load Switch


RoHS
 COMPLIANT


ABSOLUTE MAXIMUM RATINGS ($T_A = 25^\circ\text{C}$, unless otherwise noted)

PARAMETER	SYMBOL	Limit	UNIT
Drain-Source Voltage	V_{DS}	- 70	V
Gate-Source Voltage	V_{GS}	± 20	
Continuous Drain Current ($T_J = 150^\circ\text{C}$) ^a	I_D	- 95	A
		- 60	
Pulsed Drain Current	I_{DM}	- 380	
Continuous Source Current (Diode Conduction) ^a	I_S	- 90	
Avalanche Current	I_{AS}	- 92	mJ
Single Pulse Avalanche Energy	E_{AS}	250	
Maximum Power Dissipation ^a	P_D	120	W
		76	
Operating Junction and Storage Temperature Range	T_J, T_{stg}	-55 to +150	$^\circ\text{C}$
Soldering Recommendations (Peak Temperature) ^{b, c}		260	

THERMAL RESISTANCE RATINGS

PARAMETER	SYMBOL	TYPICAL	MAXIMUM	UNIT
Maximum Junction-to-Ambient ^a	R_{thJA}	10	23	$^\circ\text{C/W}$
		20	35	
Maximum Junction-to-Case (Drain)	R_{thJC}	1	1.3	

Notes

- Surface mounted on 1" x 1" FR4 board.
- The DFN5x6 is a leadless package. The end of the lead terminal is exposed copper (not plated) as a result of the singulation process in manufacturing. A solder fillet at the exposed copper tip cannot be guaranteed and is not required to ensure adequate bottom side solder interconnection.
- Rework conditions: manual soldering with a soldering iron is not recommended for leadless components.

SPECIFICATIONS ($T_J = 25\text{ }^{\circ}\text{C}$, unless otherwise noted)

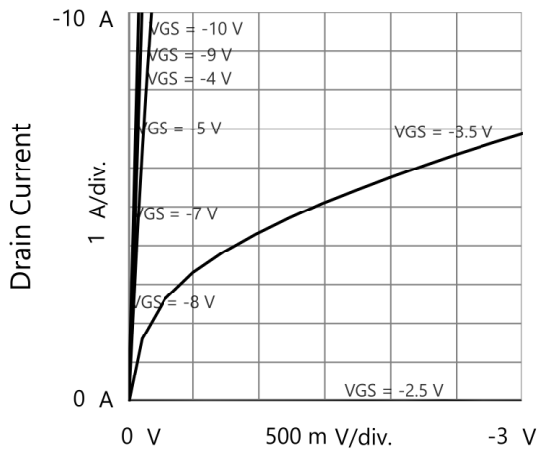
PARAMETER	SYMBOL	TEST CONDITIONS	MIN.	TYP.	MAX.	UNIT
Static						
Drain-Source Breakdown Voltage	V _{DS}	V _{GS} = 0 V, I _D = -250 μA	-70	-	-	V
Gate Threshold Voltage	V _{GS(th)}	V _{DS} = V _{GS} , I _D = -250 μA	-1	-	-3	
Gate-Body Leakage	I _{GSS}	V _{DS} = 0 V, V _{GS} = ± 20 V	-	-	± 100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} = -70V, V _{GS} = 0 V	-	-	-1	μA
		V _{DS} = -56 V, V _{GS} = 0 V, T _J = 70 °C	-	-	-10	
On-State Drain Current ^a	I _{D(on)}	V _{DS} ≤ -5 V, V _{GS} = -10 V	-80	-	-	A
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = -10 V, I _D = -15 A	-	6	7.5	mΩ
		V _{GS} = -4.5 V, I _D = -10 A	-	10	12	
Forward Transconductance ^a	g _{fs}	V _{DS} = -15 V, I _D = -15 A	-	65	-	S
Dynamic ^b						
Input Capacitance	C _{iss}	V _{DS} = -30 V, V _{GS} = -10 V, f = 1 MHz	-	4890	-	pF
Output Capacitance	C _{oss}		-	930	-	
Reverse Transfer Capacitance	C _{rss}		-	5	-	
Total Gate Charge	Q _g	V _{DS} = -30 V, V _{GS} = -10 V, I _D = -15 A	-	121	-	nC
Gate-Source Charge	Q _{gs}		-	20	-	
Gate-Drain Charge	Q _{gd}		-	32	-	
Gate Resistance	R _g	f = 1 MHz	-	8.5	-	Ω
Turn-On Delay Time	t _{d(on)}	V _{DD} = -30 V, R _L = 30 Ω I _D ≅ -15 A, V _{GEN} = -10 V, R _g = 6 Ω	-	20	-	ns
Rise Time	t _r		-	20	-	
Turn-Off Delay Time	t _{d(off)}		-	205	-	
Fall Time	t _f		-	90	-	
Source-Drain Diode Ratings and Characteristics (T _C = 25 °C)						
Pulsed Current	I _{SM}		-	-	-380	A
Diode Forward Voltage ^a	V _{SD}	I _S = -1 A, V _{GS} = 0 V	-	-	-1	V
Source-Drain Reverse Recovery Time	t _{rr}	I _F = -4.5 A, dI/dt = 100 A/μs	-	45	-	ns
Reverse Recovery Charge	Q _{rr}		-	300	-	nC

Notes

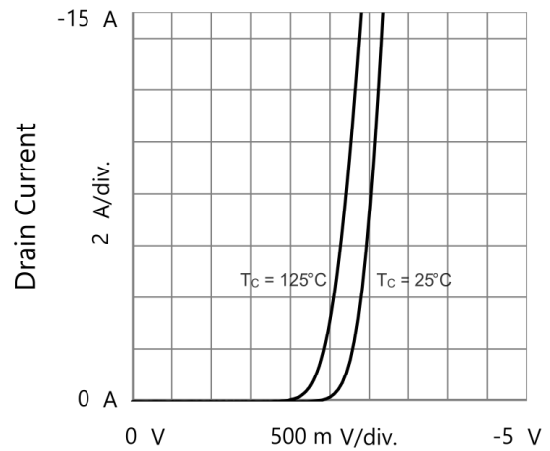
- a. Pulse test; pulse width $\leq 300\text{ }\mu\text{s}$, duty cycle $\leq 2\%$.
 b. Guaranteed by design, not subject to production testing.

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.

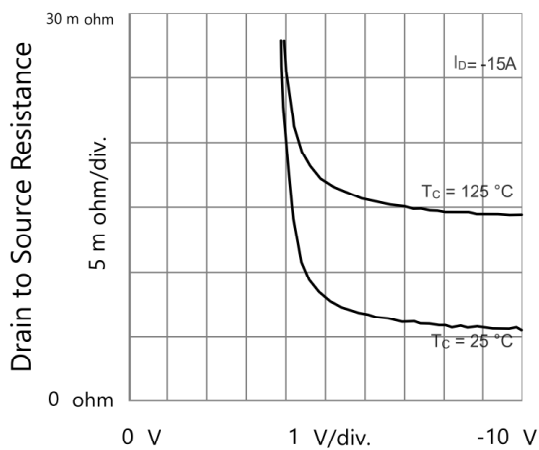
TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



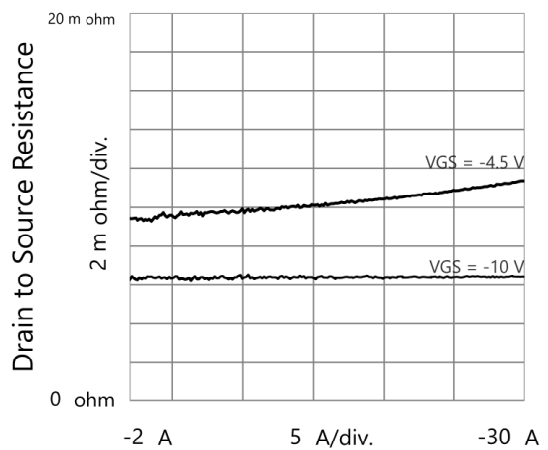
Drain to Source Voltage
Output Characteristics



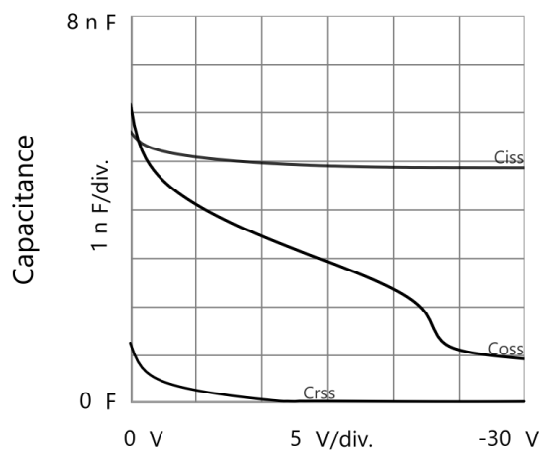
Gate to Source Voltage
Transfer Characteristics



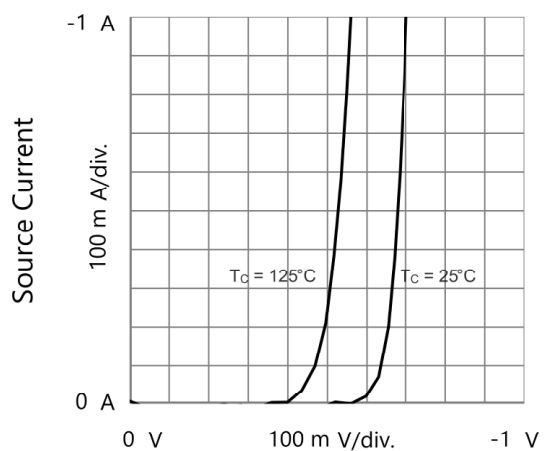
Gate to Source Voltage
Drain to Source Resistance vs. Gate to Source Voltage



Drain Current
Drain to Source Resistance vs. Drain Current

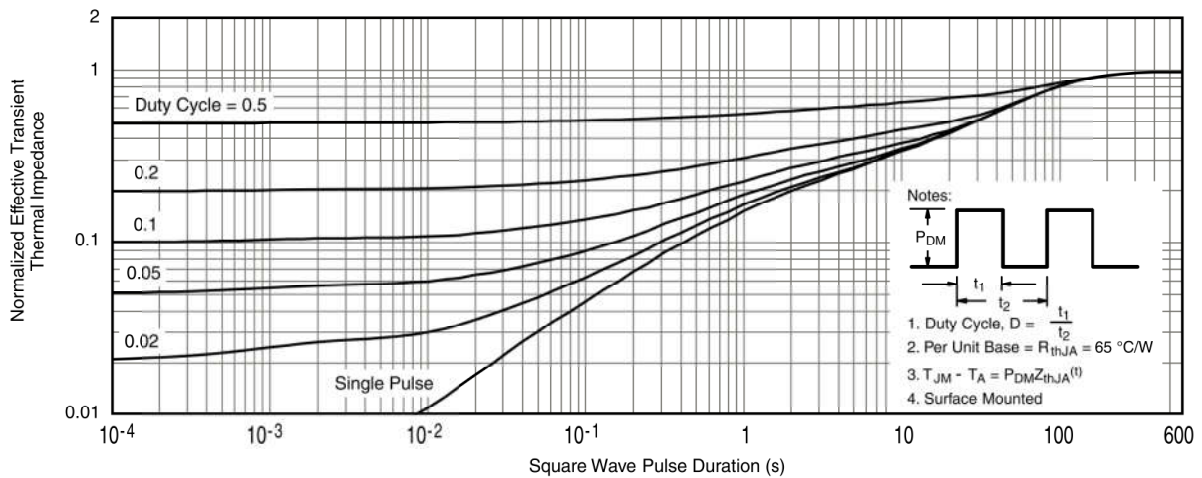
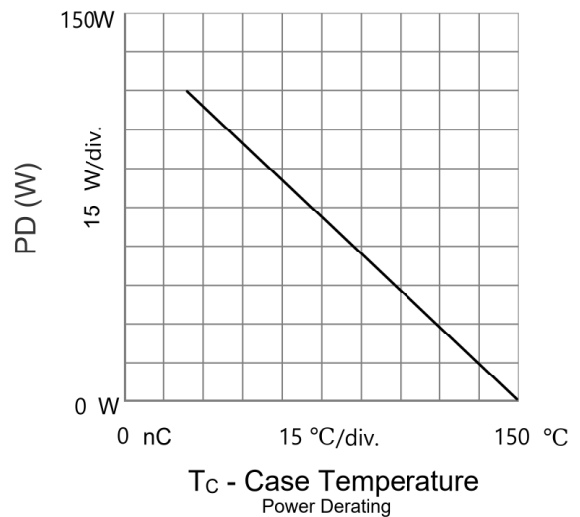
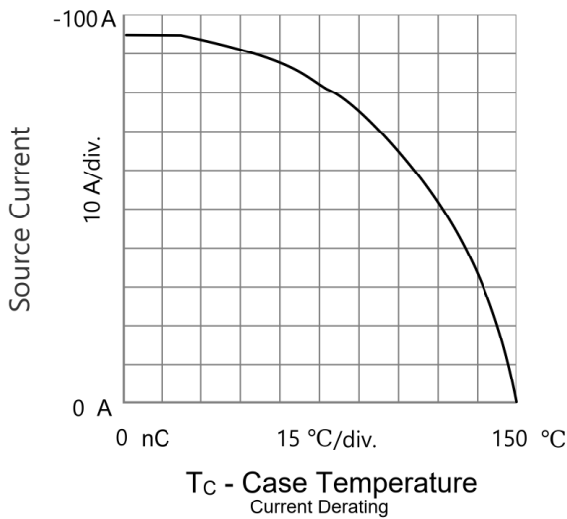
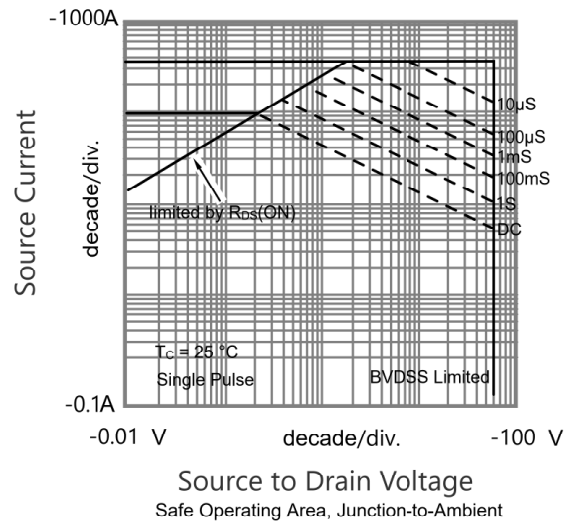
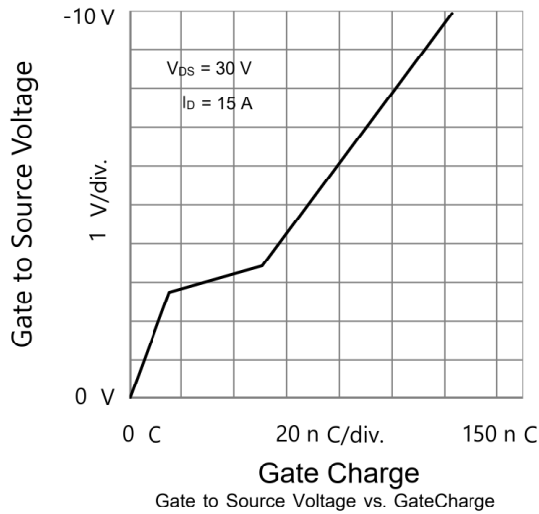


Drain to Source Voltage
Capacitances



Source to Drain Voltage
Body Diode Forward Characteristics

TYPICAL CHARACTERISTICS (25 °C, unless otherwise noted)



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