

RoHS

HALOGEN FREE

P-Channel 30 V (D-S) MOSFET

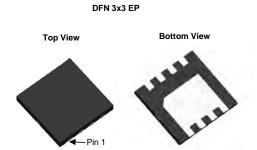
V_{DS}		-30	V
$R_{DS(on),typ}$	V _{GS} =10V	11	$m\Omega$
R _{DS(on),typ}	V _{GS} =4.5V	18	mΩ
ID	-45	Α	

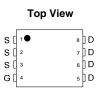
FEATURES

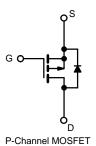
- Halogen-free According to IEC 61249-2-21 Definition
- TrenchFET® Power MOSFET
- Low Thermal Resistance PowerPAK[®]
 Package with Small Size and Low 1.07 mm
 Profile
- 100 % R_g and UIS Tested
- · Compliant to RoHS Directive 2002/95/EC

APPLICATIONS

- · Load Switch
- · Adaptor Switch
- Notebook PC







Parameter	Symbol	Limit	Unit	
Drain-Source Voltage		V_{DS}	- 30	V
Gate-Source Voltage		V _{GS}	± 20	v
	T _C = 25 °C		- 45	
Continuous Drain Current (T = 150 °C)	T _C = 70 °C	1 , -	- 30	
Continuous Drain Current (T _J = 150 °C)	T _A = 25 °C	- I _D	- 14.4 ^{a, b}	
	T _A = 70 °C		- 11.5 ^{a, b}	
Pulsed Drain Current	1	I _{DM}	- 60	Α
Continuous Courses Dunin Biodo Current	T _C = 25 °C		- 35 ^e	
Continuous Source-Drain Diode Current	T _A = 25 °C	ls =	- 3.2 ^{a, b}	
Avalanche Current	. 0.4 11	I _{AS}	- 25	
Single-Pulse Avalanche Energy	L = 0.1 mH	E _{AS}	31.25	mJ
	T _C = 25 °C		52	
Maximum Daver Dissination	T _C = 70 °C	ь —	43	w
Maximum Power Dissipation	T _A = 25 °C	P _D	3.8 ^{a, b}	vv
	T _A = 70 °C		2.4 ^{a, b}	
Operating Junction and Storage Temperature Range	T _J , T _{stg}	- 50 to 150	°C	
Soldering Recommendations (Peak Temperature) ^{c, d}		260		

Notes:

- a. Surface mounted on 1" x 1" FR4 board.
- b. t = 10 s.
- c.Rework conditions: manual soldering with a soldering iron is not recommended for leadless components.
- d.Package limited.
- e.Based on T $_{\text{C}}$ = 25 $^{\circ}\text{C}$



THERMAL RESISTANCE RATINGS					
Parameter		Symbol	Typical	Maximum	Unit
Maximum Junction-to-Ambient ^{a, b}	t ≤ 10 s	R _{thJA}	26	33	°C/W
Maximum Junction-to-Case (Drain)	Steady State	R _{thJC}	1.9	2.4	C/ VV

Notes:

- a. Surface mounted on 1" x 1" FR4 board.
- b. Maximum under Steady State conditions is 81 °C/W.

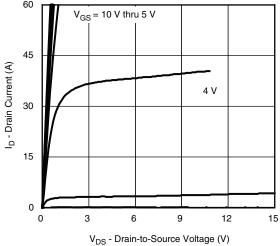
Parameter	Symbol	Test Conditions	Min.	Тур.	Max.	Unit	
Static		,					
Drain-Source Breakdown Voltage	V_{DS}	$V_{GS} = 0 \text{ V}, I_D = -250 \mu\text{A}$	- 30			V	
V _{DS} Temperature Coefficient	$\Delta V_{DS}/T_{J}$	I _D = - 250 μA		- 20		mV/°C	
V _{GS(th)} Temperature Coefficient	$\Delta V_{GS(th)}/T_J$	- Ι _D = - 250 μΑ		5			
Gate-Source Threshold Voltage	V _{GS(th)}	$V_{DS} = V_{GS}, I_{D} = -250 \mu A$	- 1.5		- 2.8	V	
Gate-Source Leakage	I _{GSS}	$V_{DS} = 0 \text{ V}, V_{GS} = \pm 20 \text{ V}$			± 100	nA	
Zara Cata Valtaga Drain Current	I _{DSS}	V _{DS} = - 30 V, V _{GS} = 0 V		- 1			
Zero Gate Voltage Drain Current		V _{DS} = - 30 V, V _{GS} = 0 V, T _J = 55 °C			- 10	μΑ	
On-State Drain Current ^a	I _{D(on)}	$V_{DS} \le -5 \text{ V}, V_{GS} = -10 \text{ V}$	- 20			Α	
Durin Orange On Olate Besteten and	B	V _{GS} = - 10 V, I _D = - 14.4 A		11			
Drain-Source On-State Resistance ^a	R _{DS(on)}	V _{GS} = - 4.5 V, I _D = - 11.5 A		18		mΩ	
Forward Transconductance ^a	9 _{fs}	V _{DS} = - 15 V, I _D = - 14.4 A		37		S	
Dynamic ^b							
Input Capacitance	C _{iss}			2000		pF	
Output Capacitance	C _{oss}	$V_{DS} = -15 \text{ V}, V_{GS} = 0 \text{ V}, f = 1 \text{ MHz}$		385			
Reverse Transfer Capacitance	C _{rss}	1		322			
Total Gate Charge	Q_g	V _{DS} = - 15 V, V _{GS} = - 10 V, I _D = - 14.4 A			15	15 14 7 9	
					14		
Gate-Source Charge	Q_{gs}	$V_{DS} = -15 \text{ V}, V_{GS} = -4.5 \text{ V}, I_{D} = -14.4 \text{ A}$			7		
Gate-Drain Charge	Q_{gd}				9		
Gate Resistance	R_g	f = 1 MHz	0.4	1.8	3.6	Ω	
Turn-On Delay Time	t _{d(on)}			50	75		
Rise Time	t _r	$V_{DD} = -15 \text{ V}, R_L = 1.5 \Omega$		43	65]	
Turn-Off DelayTime	t _{d(off)}	$I_D \cong$ - 10 A, V_{GEN} = - 4.5 V, R_g = 1 Ω		30	45]	
Fall Time	t _f			14	21	ns	
Turn-On Delay Time	t _{d(on)}			14	21	115	
Rise Time	t _r	$V_{DD} = -15 \text{ V}, R_L = 1.5 \Omega$		9	18		
Turn-Off DelayTime	t _{d(off)}	$I_D \cong$ - 10 A, V_{GEN} = - 10 V, R_g = 1 Ω		36	54		
Fall Time	t _f] [10	20	1	
Drain-Source Body Diode Characterist	ics						
Continuous Source-Drain Diode Current	I _S	T _C = 25 °C			- 35 ^e	۸	
Pulse Diode Forward Current ^a	I _{SM}				- 60	Α	
Body Diode Voltage	V_{SD}	I _F = - 10 A		- 0.8	- 1.2	V	
Body Diode Reverse Recovery Time	t _{rr}			31	47	ns	
Body Diode Reverse Recovery Charge	Q_{rr}	I _F = - 10 A, dl/dt = 100 A/μs, T _J = 25 °C		30	45	nC	
Reverse Recovery Fall Time	t _a	- 1		15			
Reverse Recovery Rise Time	t _b	1		16		ns	

Notes:

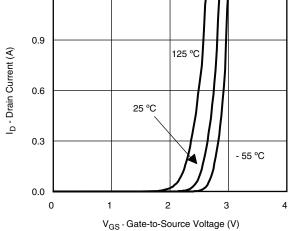
- a. Pulse test; pulse width \leq 300 μ s, duty cycle \leq 2 %.
- b. Guaranteed by design, not subject to production testing.

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.



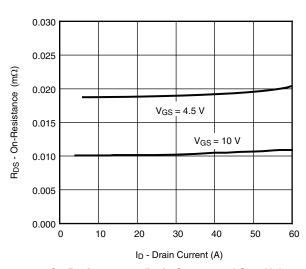


Output Characteristics

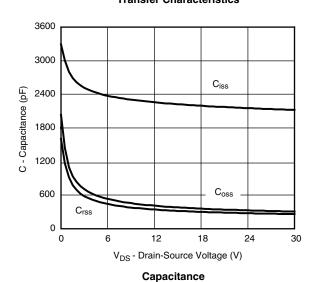


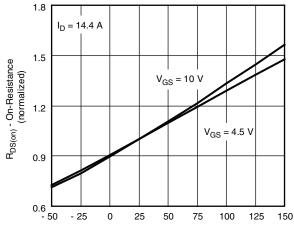
1.2

Transfer Characteristics



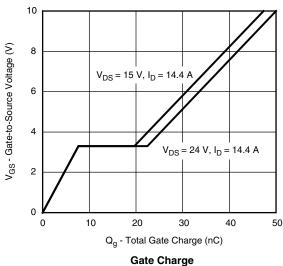
On-Resistance vs. Drain Current and Gate Voltage



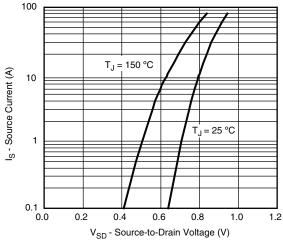


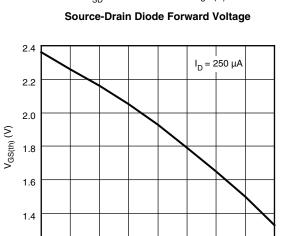


T_J - Junction Temperature (°C) On-Resistance vs. Junction Temperature









 T_J - Temperature (°C)

Threshold Voltage

100

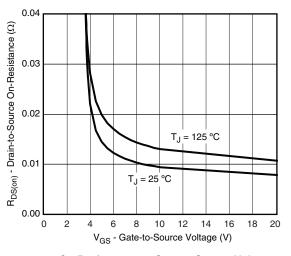
125

150

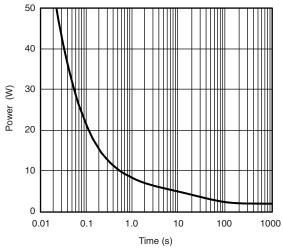
1.2 50

- 25

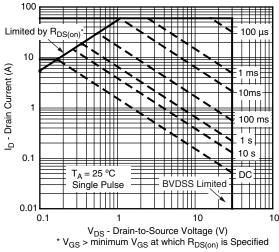
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On-Resistance vs. Gate-to-Source Voltage



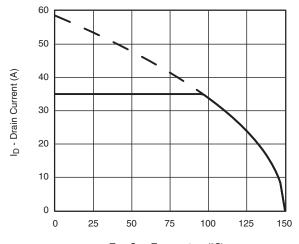
Single Pulse Power, Junction-to-Ambient



Safe Operating Area, Junction-to-Ambient

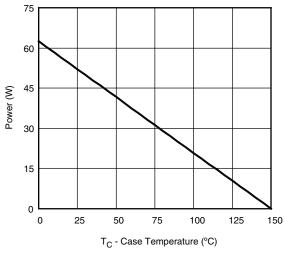
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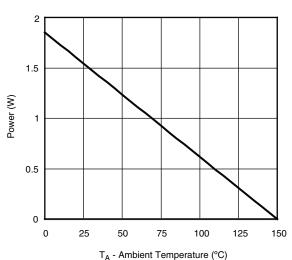




 $T_{\mbox{\scriptsize C}}$ - CaseTemperature (°C)

Current Derating*



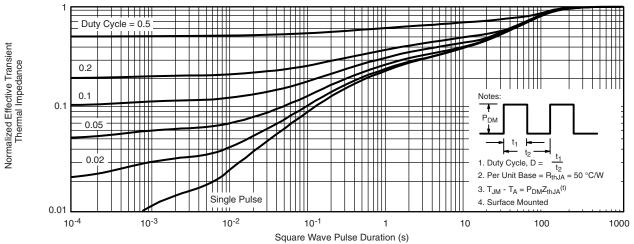


Power, Junction-to-Case

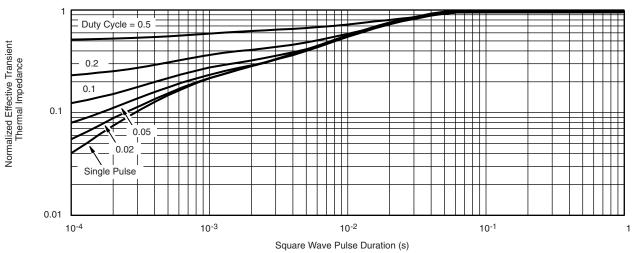
Power, Junction-to-Ambient

^{*} The power dissipation P_D is based on $T_{J(max)} = 150$ °C, using junction-to-case thermal resistance, and is more useful in settling the upper dissipation limit for cases where additional heatsinking is used. It is used to determine the current rating, when this rating falls below the package limit





Normalized Thermal Transient Impedance, Junction-to-Ambient

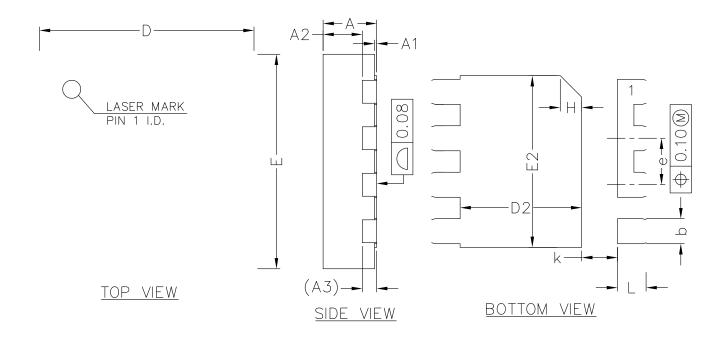


Normalized Thermal Transient Impedance, Junction-to-Case

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6







COMMON DIMENSIONS
(UNITS OF MEASURE=MILLIMETER)

SYMBOL	MIN	NOM	MAX
А	0.70	0.75	0.80
A1	0.00	0.02	0.05
A2	0.50	0.55	0.60
А3		0.20REF	
Ь	0.30	0.35	0.40
D	2.90	3.00	3.10
Е	2.90	3.00	3.10
D2	1.60	1.70	1.80
E2	2.30	2.40	2.50
е	0.55	0.65	0.75
K	0.40	0.50	0.60
L	0.35	0.40	0.45



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DMN2080UCB4-7 DMN61D9UWQ-13 US6M2GTR DMN31D5UDJ-7 DMP22D4UFO-7B DMN1006UCA6-7 DMN16M9UCA6-7
STF5N65M6 IRF40H233XTMA1 STU5N65M6 DMN6022SSD-13 DMN13M9UCA6-7 DMTH10H4M6SPS-13 DMN2990UFB-7B
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