

30V N-Channel Power MOSFET

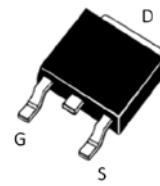
DESCRIPTION :

- Excellent $R_{DS(ON)}$
- Low Gate Charge
- 100% UIS Tested, 100% ΔV_{DS} Tested
- Pb-Free Lead Plating
- RoHS compliant
- Halogen Free

V_{DS}	30V
$I_D(T_C=25^\circ C)$	150A
$R_{DS(ON)_{Typ.}} @ V_{GS}=10V$	2.6m Ω

TYPICAL APPLICATIONS :

- Power Management
- Load Switch
- PWM Application



TO-252

MAXIMUM RATINGS (at $T_C = 25^\circ C$, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	30	V
Gate-Source Voltage		V_{GS}	± 20	V
Continuous Drain Current	$T_C=25^\circ C$ $T_C=100^\circ C$	I_D	150 95	A
Pulsed Drain Current ⁽¹⁾		I_{DM}	600	A
Single Pulsed Avalanche Energy ⁽²⁾		E_{AS}	210	mJ
Power dissipation	$T_C=25^\circ C$	P_D	72.7	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	$^\circ C$

Notes : 1. Repetitive Rating: Pulse Width Limited by Maximum Junction Temperature.

2. E_{AS} condition: Starting $T_J=25^\circ C$, $V_{DD}=15V$, $V_G=10V$, $R_G=25\Omega$, $L=0.5mH$, $I_{AS}=29A$

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient Junction to Case	$R_{\theta JA}$ $R_{\theta JC}$	34 1.7	$^\circ C/W$

ELECTRICAL CHARACTERISTICS (at $T_J = 25\text{ }^\circ\text{C}$, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Drain-Source Breakdown Voltage VGS = 0V, ID = 250uA	$V_{(BR)DSS}$	30			V
Zero Gate Voltage Drain Current VDS = 30 V, VGS = 0 V	I_{DSS}			1	uA
Gate-Source Leakage Current VGS = ± 20 V, VDS = 0V	I_{GSS}			± 100	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	$V_{GS(th)}$	1.0	1.9	2.5	V
Drain-Source On-State Resistance VGS = 10V, ID = 30A VGS = 4.5V, ID = 20A	$R_{DS(on)}$		2.6 4.9	3.4 6.4	m Ω
Input capacitance f=1MHz, VDS=15 V, VGS=0 V	C_{iss}		3650		pF
Output capacitance f=1MHz, VDS=15 V, VGS=0 V	C_{oss}		494		pF
Reverse transfer capacitance f=1MHz, VDS=15 V, VGS=0 V	C_{rss}		366		pF
Total Gate Charge VDD= 30V, ID= 10A, VGS= 0 to 10V	Q_G		67		nC
Gate to Source Charge VDD= 30V, ID= 10A, VGS= 0 to 10V	Q_{GS}		11		nC
Gate to Drain Charge VDD= 30V, ID= 10A, VGS= 0 to 10V	Q_{GD}		19		nC
Turn-on delay time VDD=15 V, VGS= 10V, ID= 30A, R _{GEN} =3 Ω	$t_{d(ON)}$		10		ns
Rise time VDD=15 V, VGS= 10V, ID= 30A, R _{GEN} =3 Ω	t_r		19		ns
Turn-off delay time VDD=15 V, VGS= 10V, ID= 30A, R _{GEN} =3 Ω	$t_{d(OFF)}$		50		ns
Fall time VDD=15 V, VGS= 10V, ID= 30A, R _{GEN} =3 Ω	t_f		20		ns

Body Diode

ELECTRICAL CHARACTERISTICS (at $T_J = 25\text{ }^\circ\text{C}$, unless otherwise specified)

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Diode Forward Voltage $V_{GS} = 0V, I_S = 30A$	V_{SD}			1.2	V
Maximum Continuous Body Diode Forward Current	I_S			150	A
Maximum Pulsed Body Diode Forward Current	I_{SM}			600	A
Revers Recovery Time $I_F = 20A, di/dt = 100A/\mu s$	T_{rr}		18		ns
Revers Recovery Charge $I_F = 20A, di/dt = 100A/\mu s$	Q_{rr}		6		nC

Typical Performance Characteristics

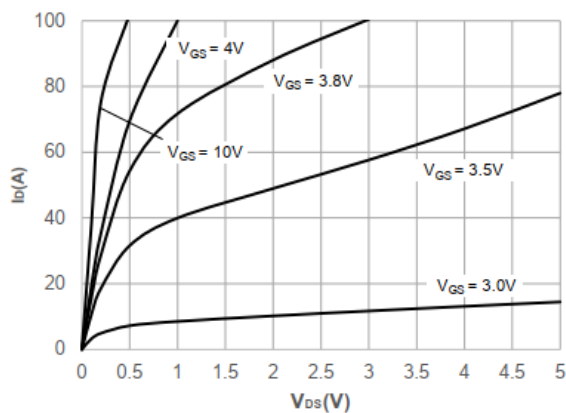


Figure 1. Output Characteristics

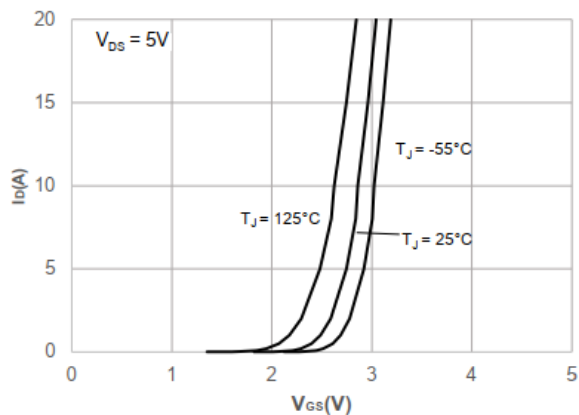


Figure 2. Typical Transfer Characteristics

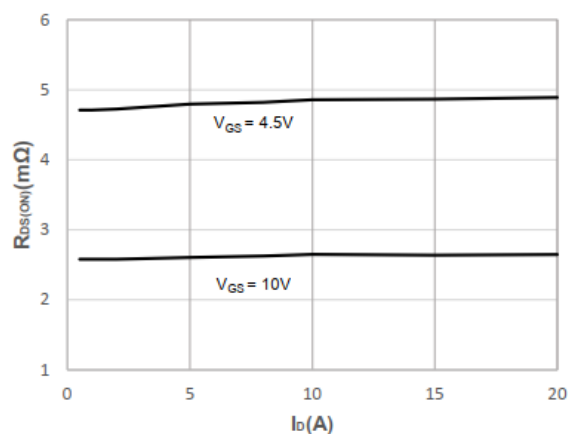


Figure 3. On-resistance vs. Drain Current

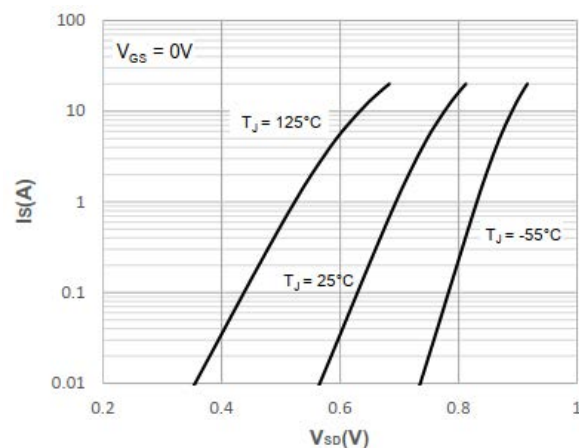


Figure 4. Body Diode Characteristics

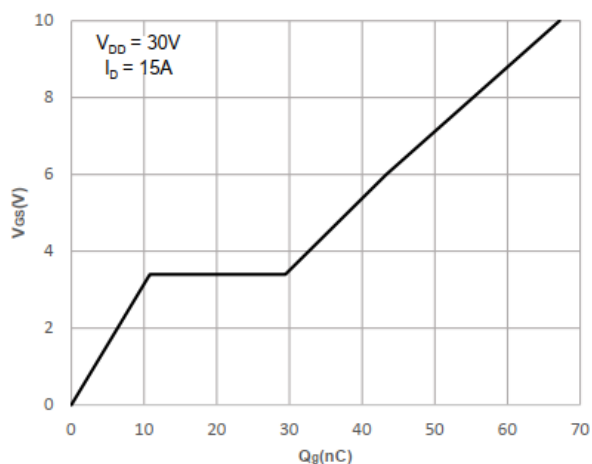


Figure 5. Gate Charge Characteristics

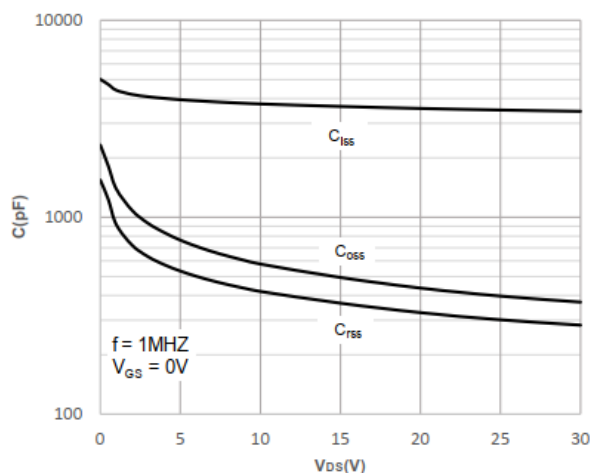


Figure 6. Capacitance Characteristics

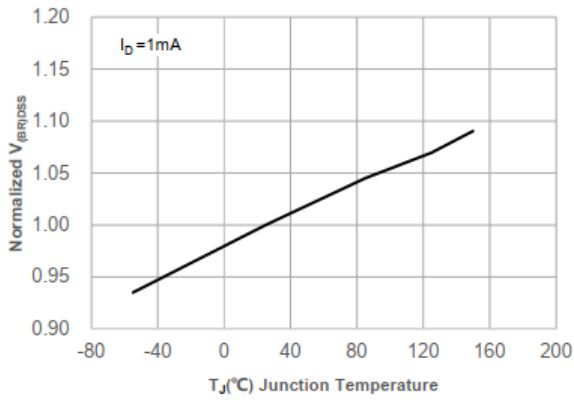


Figure 7. Normalized Breakdown voltage vs. Junction Temperature

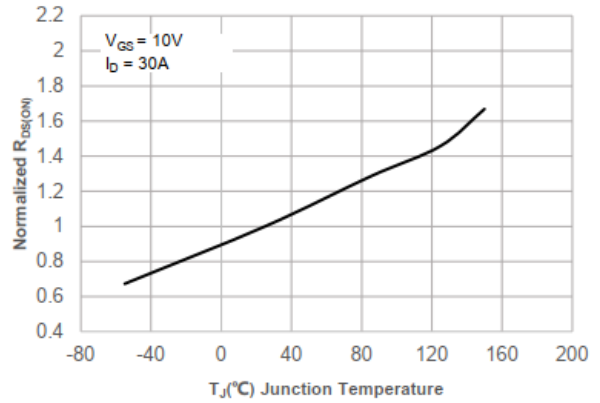


Figure 8. Normalized on Resistance vs. Junction Temperature

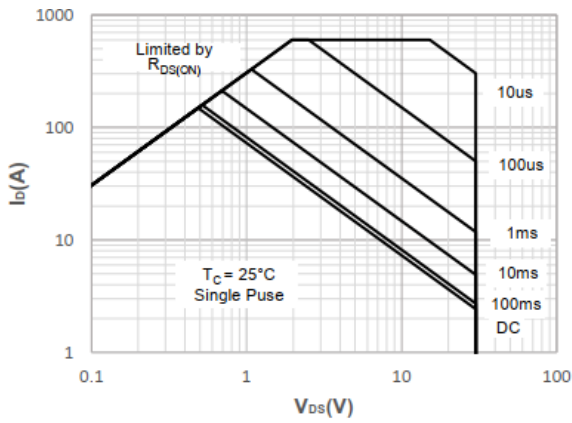


Figure 9. Maximum Safe Operating Area

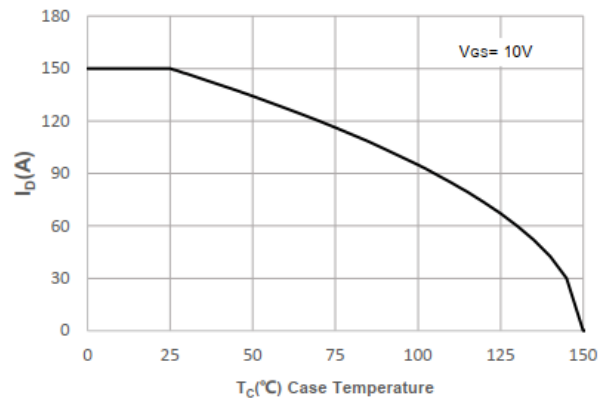


Figure 10. Maximum Continuous Drian Current vs. Case Temperature

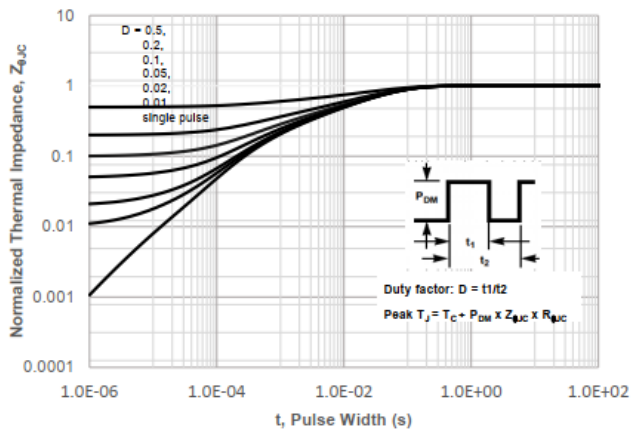


Figure 11. Normalized Maximum Transient Thermal Impedance

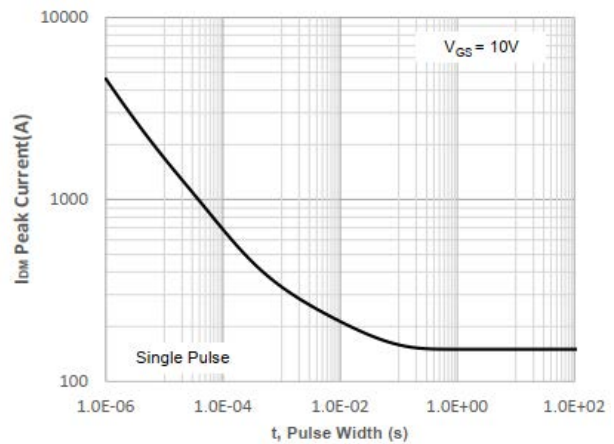
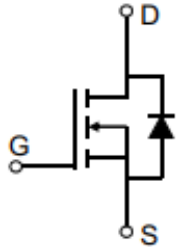
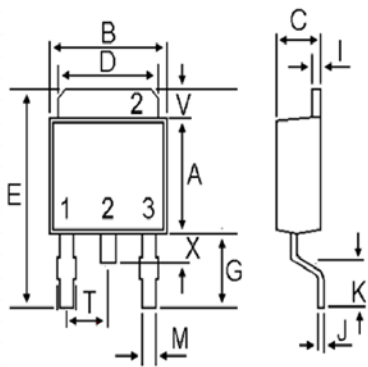


Figure 12. Peak Current Capacity

- Circuit diagram



- Package outlines : Dimensions in (mm)



DIM	MILLIMETERS	
	MIN	MAX
A	5.97	6.22
B	6.30	6.75
C	2.18	2.40
D	4.95	5.50
E	9.40	10.41
G	2.75	3.20
I	0.46	0.89
J	0.46	0.61
K	1.40	1.78
M	0.64	0.89
T	2.28	2.30
V	0.89	1.27
X	---	1.05

Notice

MOSPEC reserves the rights to make changes of the content herein the document anytime without notification. MOSPEC or anyone on its behalf, assumes no responsibility or liability for any errors or inaccuracies. Please refer to MOSPEC website for the last document.

MOSPEC disclaims any and all liability arising out of the application or use of any product including damages incidentally and consequentially incurred.

Application shown on the herein document are examples of standard use and operation. Customers are responsible for comprehending suitable use in particular applications. MOSPEC makes no representation or warranty that such application will be suitable for the specified use without further testing or modification.

The information contained herein is presented only as a guide for the applications of our products. No responsibility is assumed by MOSPEC for any infringements of patents or other rights of the third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of MOSPEC or others.

These MOSPEC products are intended for usage in general electronic equipment. Please make sure to consult with MOSPEC before you use these MOSPEC products in equipment which require specialized quality and/or reliability, and in equipment which could have major impact to the welfare of human life (atomic energy control, aeronautics , traffic control, combustion control, safety devices etc.)