

800V N-Channel Power MOSFET

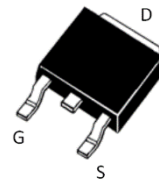
DESCRIPTION :

- Fast Switching
- Low ON Resistance($R_{DS(ON)} \leq 4.0\Omega$)
- Low Gate Charge (Typical Data:17.3 nC)
- Low Reverse transfer capacitances (Typical: 4.3pF)
- 100% Single Pulse avalanche energy Test
- RoHS-compliant

V_{DSS}	800V
I_D	4.0A
$R_{DS(ON_Typ.}$	3.7 Ω

APPLICATIONS

- Power switch circuit of adaptor and charger.



TO-252

MAXIMUM RATINGS (at $T_c = 25^\circ\text{C}$, unless otherwise specified)

Characteristic	Condition	Symbol	Value	Unit
Drain-Source Voltage		V_{DS}	800	V
Gate-Source Voltage		V_{GS}	± 30	V
Continuous Drain Current ⁽¹⁾	$T_c=25^\circ\text{C}$ $T_c=100^\circ\text{C}$	I_D	4 2.5	A
Pulsed Drain Current		I_{DM}	16	A
Avalanche Energy ⁽²⁾		EAS	153	mJ
Power dissipation	$T_c=25^\circ\text{C}$ $T_c=100^\circ\text{C}$	P_{tot}	1.3 150	W
Junction & Storage temperature Range		T_J, T_{STG}	-55~+150	$^\circ\text{C}$
High Temperature(tin solder)		T_L	300	$^\circ\text{C}$

Notes : 1. Pulse width $\leq 300\mu\text{s}$, duty cycle $\leq 2\%$.

2. $L=10\text{ mH}$, $I_D=5.5\text{A}$, $V_{DD}=50\text{V}$, Start $T_J=25^\circ\text{C}$.

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	BV _{DSS}	800			V
Zero Gate Voltage Drain Current VDS = 800 V, VGS = 0 V, T _C = 25 °C VDS = 720 V, VGS = 0 V, T _J = 125 °C	I _{DSS}			25 250	uA
Gate-Source Leakage Current VGS = ±30V, VDS = 0V	I _{GSS}			±100	nA
Gate-Source threshold voltage VDS = VGS, ID = 250uA	V _{GS(th)}	2.0		4.0	V
Drain-Source On-State Resistance VGS = 10V, ID = 2.0A	R _{DS(on)}		3.7	4.0	Ω
Input capacitance f=1MHz, VDS= 25 V, VGS=0 V	C _{iss}		567		pF
Output capacitance f=1MHz, VDS= 25 V, VGS=0 V	C _{oss}		48		pF
Reverse transfer capacitance f=1MHz, VDS= 25 V, VGS=0 V	C _{riss}		4.3		pF
Total Gate Charge VDD= 640V, ID= 4A, VGS= 10V	Q _G		17.3		nC
Gate to Source Charge VDD= 640V, ID= 4A, VGS= 10V	Q _{GS}		2.6		nC
Gate to Drain Charge VDD= 640V, ID= 4A, VGS= 10V	Q _{GD}		9.9		nC
Turn-on delay time VDD= 400 V, VGS= 10V, ID = 4A, R _G = 10Ω	t _{d(ON)}		11.6		ns
Rise time VDD= 400 V, VGS= 10V, ID = 4A, R _G = 10Ω	t _r		9.5		ns
Turn-off delay time VDD= 400 V, VGS= 10V, ID = 4A, R _G = 10Ω	t _{d(OFF)}		22.7		ns
Fall time VDD= 400 V, VGS= 10V, ID = 4A, R _G = 10Ω	t _f		14		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 $V_{GS} = 0V, I_s = 4A$	V_{FSD}			1.5	V
Continuous Source Current (BodyDiode)	I_s			4	A
Revers Recovery Time $I_F = 4A, di/dt = 100A/us, V_{GS} = 0V$	T_{rr}		531		ns
Revers Recovery Charge $I_F = 4A, di/dt = 100A/us, V_{GS} = 0V$	Q_{rr}		2370		nC

THERMAL CHARACTERISTICS

Characteristic	Condition	Symbol	Value	Unit
Thermal resistance,	Junction to Ambient Junction to Case	$R_{\theta JA}$ $R_{\theta JC}$	100 0.8	$^\circ\text{C/W}$

Typical Performance Characteristics

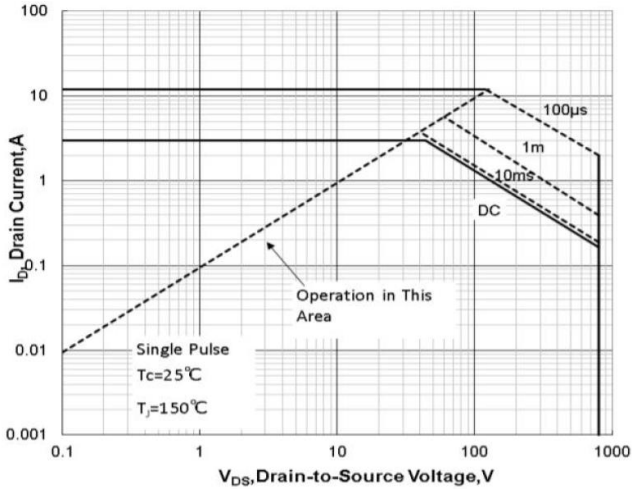


Figure 1 Maximum Forward Bias Safe Operating Area

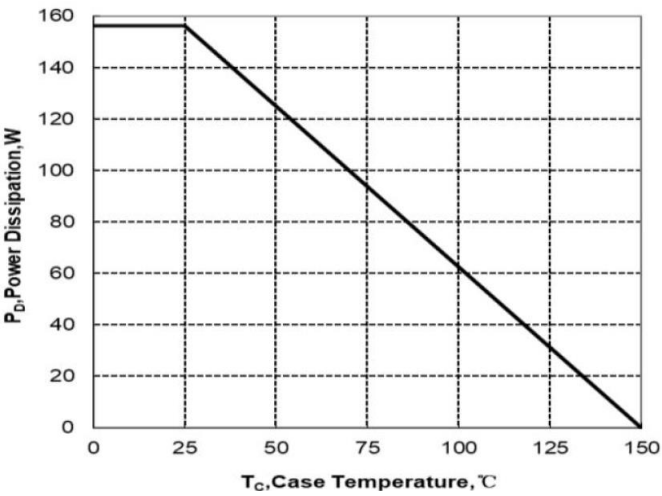


Figure 2. Maximum Power Dissipation vs Case Temperature

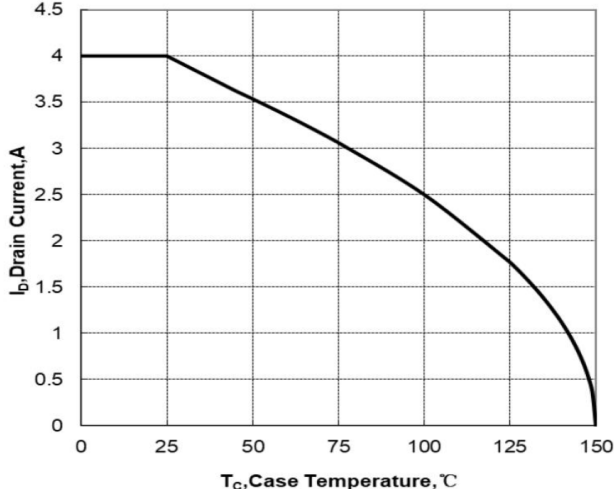


Figure 3. Maximum Continuous Drain Current vs Case Temperature

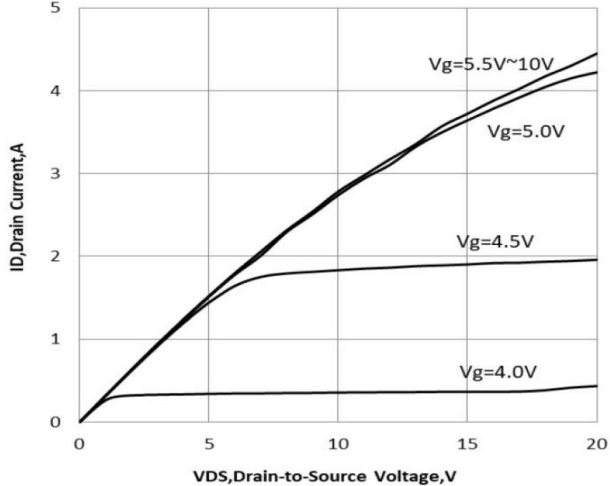


Figure 4. Typical Output Characteristics

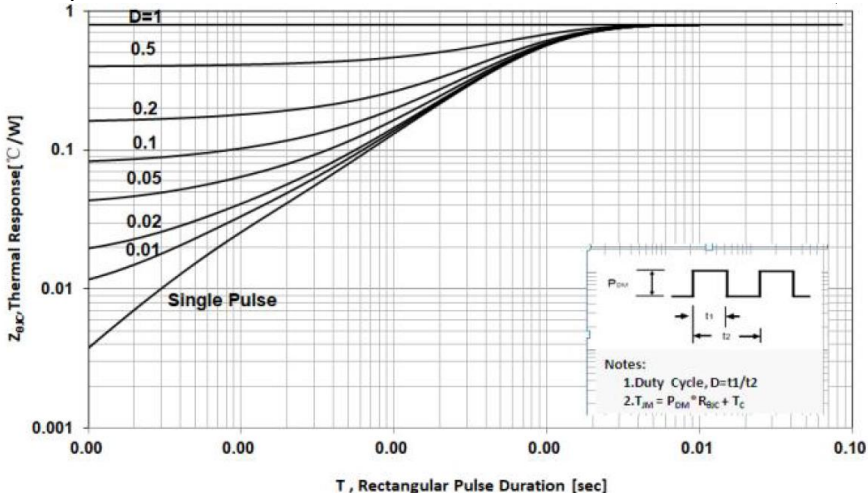


Figure 5. Maximum Effective Thermal Impedance , Junction to Case

Typical Performance Characteristics

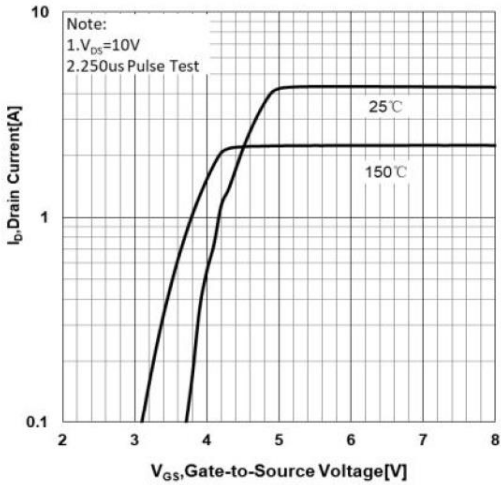


Figure 6. Typical Transfer Characteristics

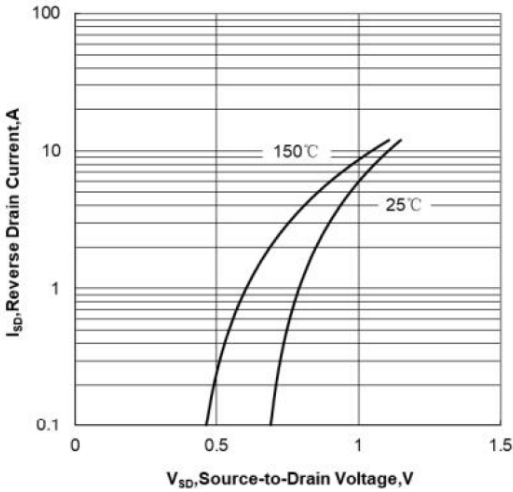


Figure 7. Typical Body Diode Transfer Characteristics

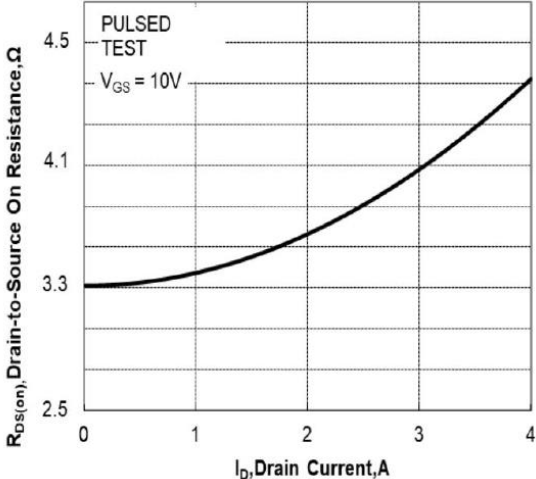


Figure 8. Typical Drain to Source ON Resistance vs Drain Current

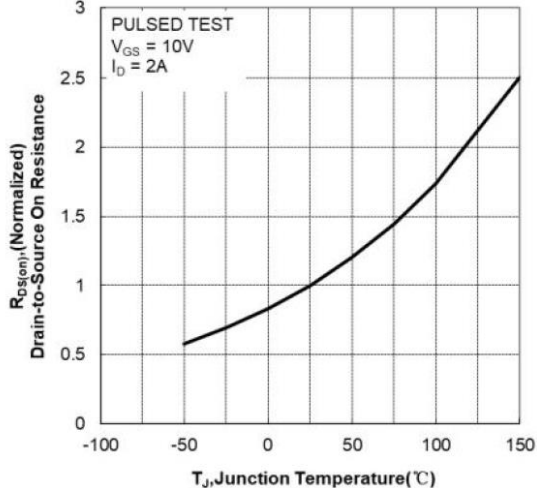


Figure 9. Typical Drain to Source on Resistance vs Junction Temperature

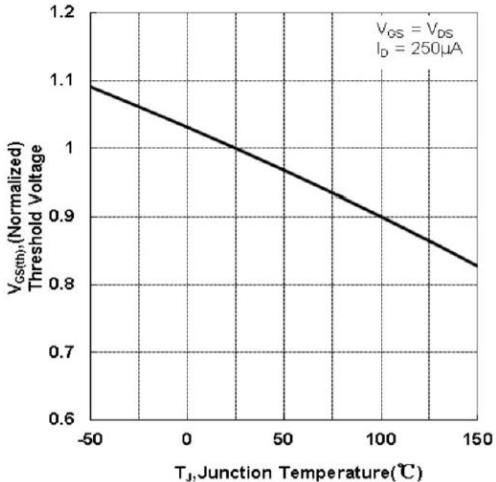


Figure 10. Typical Threshold Voltage vs Junction Temperature

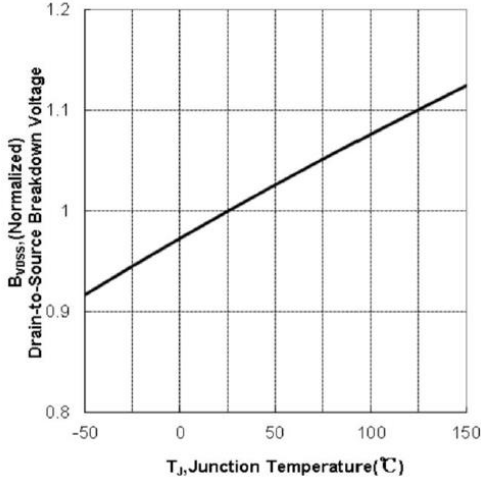


Figure 11. Typical Breakdown Voltage vs Junction Temperature

Typical Performance Characteristics

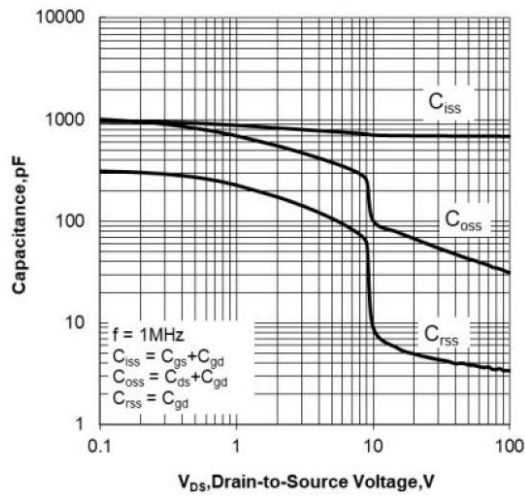


Figure 12. Typical Capacitance vs Drain to Source Voltage

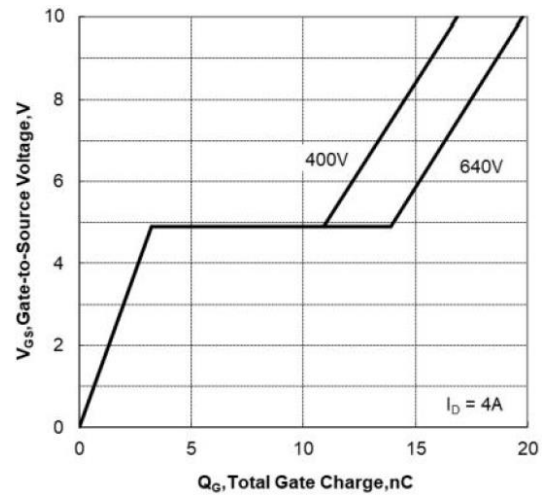
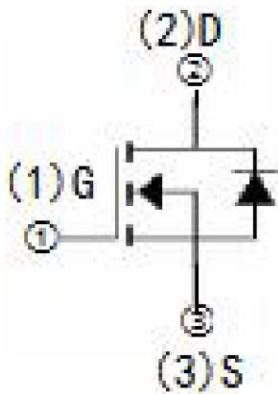
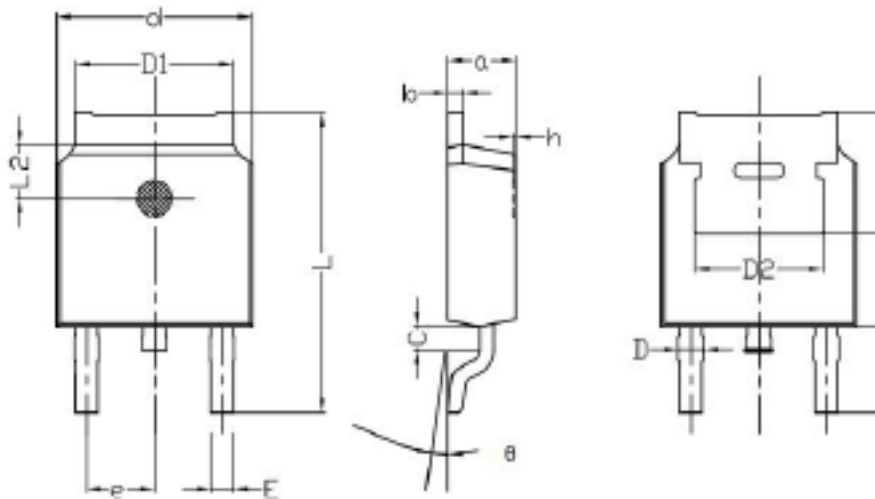


Figure 13. Typical Gate Charge vs Gate to Source Voltage

·Circuit diagram



·Package outlines : Dimensions in (mm)



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	min.	max.	min.	max.
a	2.20	2.40	0.087	0.095
b	0.46	0.58	0.018	0.023
c	0.70	0.90	0.028	0.035
D	0.80	0.90	0.032	0.035
d	6.50	6.70	0.2561	0.2640
D1	5.10	5.46	0.201	0.215
D2	4.73	4.93	0.1864	0.1942
A	6.00	6.20	0.2364	0.2443
e	2.19	2.39	0.0861	0.0940
L	10.40	11.00	0.4098	0.4334
B	3.5	3.7	0.1379	0.1458
L2	1.5	1.7	0.0591	0.0670
θ	0	8	0	8
h	0	0.3	0	0.0118
V	5.25	5.45	0.2069	0.2147
E	0.6	0.8	0.0236	0.0315

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.)