



Features

- Trench Power LV MOSFET Technology
- Excellent Package for Heat Dissipation
- High Density Cell Design for Low $R_{DS(ON)}$
- Halogen Free Available Upon Request By Adding Suffix "-HF"
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant ("P" Suffix Designates RoHS Compliant. See Ordering Information)

Maximum Ratings

- Operating Junction Temperature Range : -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 20°C/W Junction to Ambient
- Thermal Resistance: 2.5°C/W Junction to Case

Parameter	Symbol	Rating	Unit
Drain-Source Voltage	V_{DS}	40	V
Gate-Source Voltage	V_{GS}	± 20	V
Continuous Drain Current	I_D	120	A
Pulsed Drain Current ⁽¹⁾	I_{DM}	390	A
Total Power Dissipation ⁽²⁾	P_D	110	W
Single Pulsed Avalanche Energy ⁽³⁾	E_{AS}	272	mJ

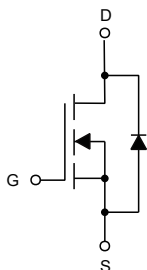
Note:

1. Pulse Test: Pulse Width $\leq 300\mu s$, Duty cycle $\leq 2\%$.

2. The power dissipation P_D is based on $T_{J(MAX)} = 150^\circ C$, using junction-to-case thermal resistance, and is more useful in setting the upper dissipation limit for cases where additional heatsinking is used.

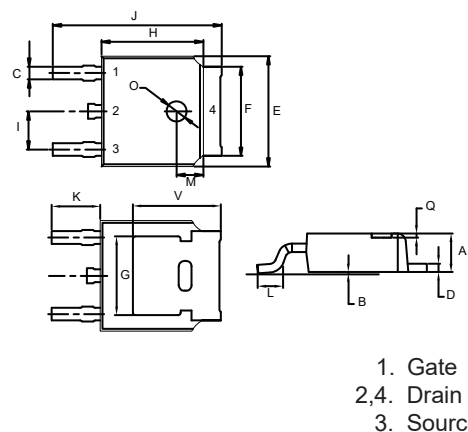
3. $T_J = 25^\circ C$, $V_{DD} = 40V$, $V_G = 10V$, $L = 0.5mH$.

Internal Structure



N-CHANNEL MOSFET

DPAK(TO-252)



DIMENSIONS					
DIM	INCHES		MM		NOTE
	MIN	MAX	MIN	MAX	
A	0.087	0.094	2.20	2.40	
B	0.000	0.005	0.00	0.13	
C	0.026	0.034	0.66	0.86	
D	0.018	0.023	0.46	0.58	
E	0.256	0.264	6.50	6.70	
F	0.201	0.215	5.10	5.46	
G	0.190		4.83		TYP.
H	0.236	0.244	6.00	6.20	
I	0.086	0.094	2.18	2.39	
J	0.386	0.409	9.80	10.40	
K	0.114		2.90		TYP.
L	0.055	0.067	1.40	1.70	
M	0.063		1.60		TYP.
O	0.043	0.051	1.10	1.30	
Q	0.000	0.012	0.00	0.30	
V	0.211		5.35		TYP.



Electrical Characteristics @ 25°C (Unless Otherwise Specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Static Characteristics						
Drain-Source Breakdown Voltage	V _{(BR)DSS}	V _{GS} =0V, I _D =250μA	40			V
Gate-Source Leakage Current	I _{GSS}	V _{DS} =0V, V _{GS} =±20V			±100	nA
Zero Gate Voltage Drain Current	I _{DSS}	V _{DS} =40V, V _{GS} =0V			1	μA
Gate-Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =250μA	1	1.5	2.5	V
Drain-Source On-Resistance	R _{DS(on)}	V _{GS} =10V, I _D =15A		2.8	3.5	mΩ
		V _{GS} =4.5V, I _D =10A		4	4.8	mΩ
Gate Resistance	R _g	f=1MHz, Open drain		3.1		Ω
Diode Characteristics						
Continuous Body Diode Current	I _S				120	A
Diode Forward Voltage	V _{SD}	V _{GS} =0V, I _S =15A			1.2	V
Reverse Recovery Time	t _{rr}	I _S =20A, dI _F /dt=100A/μs		22.3		ns
Reverse Recovery Charge	Q _{rr}			7.4		nC
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =20V, V _{GS} =0V, f=1MHz		4645		pF
Output Capacitance	C _{oss}			436		
Reverse Transfer Capacitance	C _{rss}			360		
Total Gate Charge	Q _g	V _{DS} =20V, V _{GS} =10V, I _D =20A		102		nC
Gate-Source Charge	Q _{gs}			15.8		
Gate-Drain Charge	Q _{gd}			21.9		
Turn-On Delay Time	t _{d(on)}	V _{DS} =20V, V _{GEN} =10V, R _G =3Ω, I _{DS} =20A		12		ns
Turn-On Rise Time	t _r			54		
Turn-Off Delay Time	t _{d(off)}			120		
Turn-Off Fall Time	t _f			80		



Curve Characteristics

Fig. 1 - Typical Output Characteristics

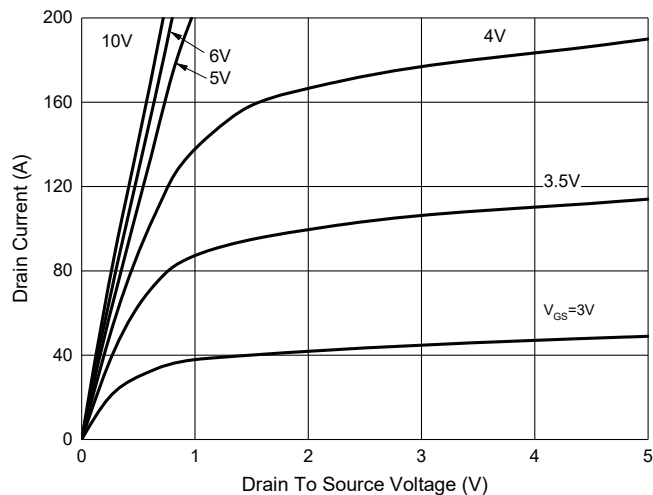


Fig. 2 - Transfer Characteristics

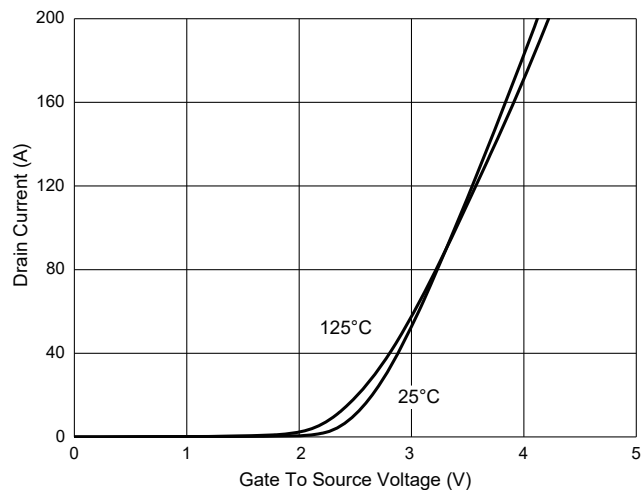


Fig. 3 - $R_{DS(ON)}-I_D$

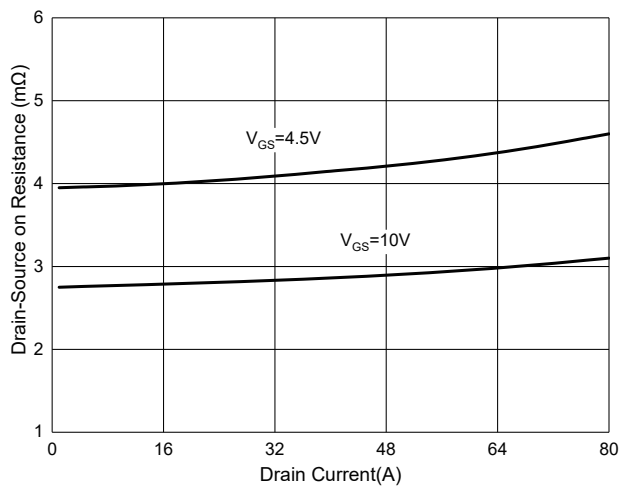


Fig. 4 - Normalized On Resistance Characteristics

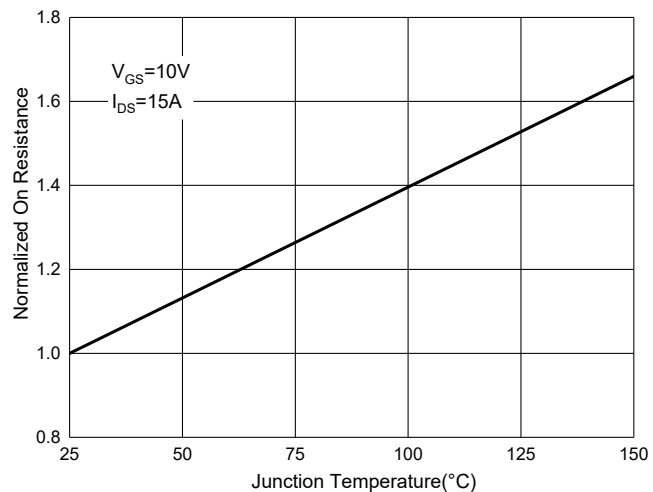


Fig. 5 - Capacitance Characteristics

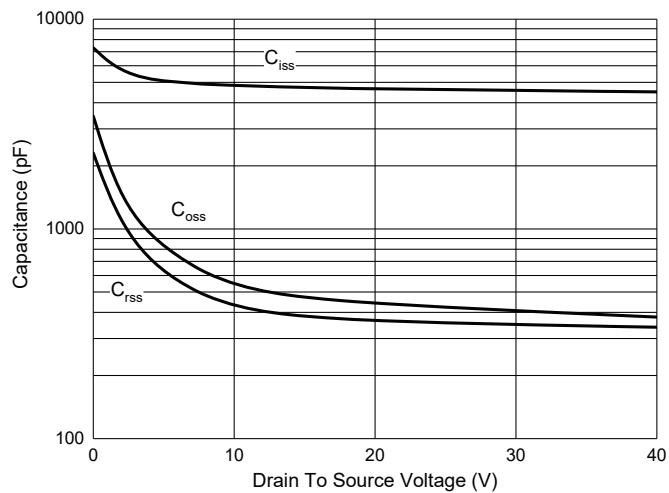
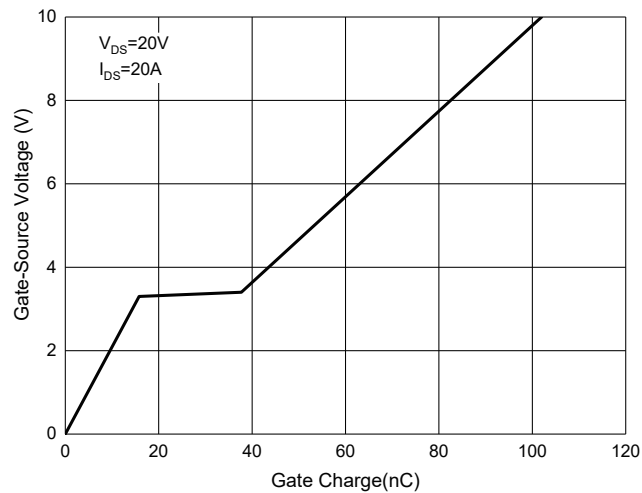


Fig. 6 - Gate Charge





Curve Characteristics

Fig. 7 - Safe Operation Area

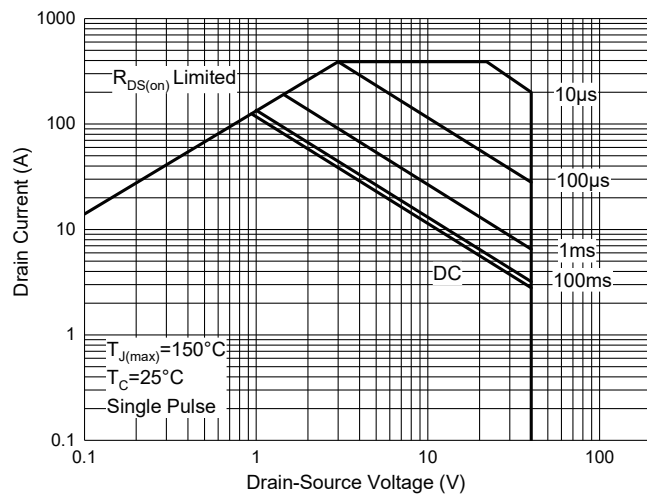


Fig. 8 - Normalized Maximum Transient Thermal Impedance

