

N-Channel Enhancement Mode MOSFET

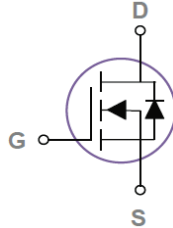
Preliminary

Features

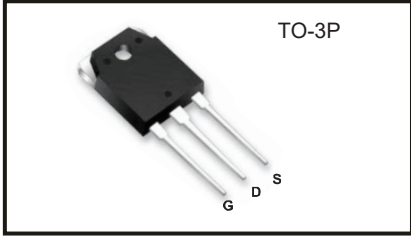
- Proprietary New Planar Technology
- Low Gate Charge Minimize Switching Loss
- Fast Recovery Body Diode

Applications

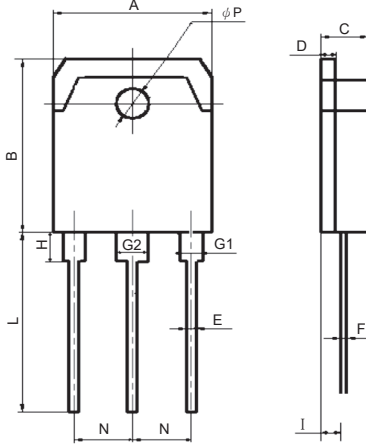
- DC-DC Converters
- DC-AC Inverters for UPS
- SMPS and Motor Controls



V_{DSS}	300V
$I_{D(@25^{\circ}C)}$	50A
$R_{DS(ON) \text{ typ.}}$	68m Ω



Package Dimensions



Absolute Maximum Ratings

(Tc = 25°C unless otherwise specified)

Parameter	Symbol	Ratings	Unit
Drain Source Voltage	V_{DS}	300	V
Gate Source Voltage	V_{GS}	± 20	V
Drain Current Continuous @ Tc = 25°C @ Tc = 100°C	I_D	50 31	A
Drain Current Pulsed	I_{DM}	200	A
Single Pulse Avalanche Energy	E_{AS}	3044	mJ
Power Dissipation @ Tc= 25°C	P_D	305	W
Storage Temperature Range	T_{STG}	-55 to +150	°C
Operating Junction Temperature Range	T_J	-55 to +150	°C
Thermal Resistance Junction to Case	$R_{\theta Jc}$	0.41	°C/W
Thermal Resistance, Junction-to-Ambient	$R_{\theta JA}$	50	°C/W

ITEM	SPEC(mm)	
	MIN	MAX
A	15.38	15.90
B	19.70	20.10
C	4.50	4.90
D	1.49	1.51
E	0.80	1.20
F	0.59	0.61
G1	2.00	2.10
G2	3.00	3.10
H	3.20	4.00
I	1.32	1.48
L	19.85	20.50
N	5.25	5.65
ΦP	3.40	3.50

Electrical Characteristics @ T_c =25°C (unless otherwise specified)

Parameter	Symbol	Conditions	Min.	Typ.	Max.	Unit
OFF Characteristics						
Drain-Source Breakdown Voltage	BV _{DSS}	V _{GS} =0V , I _D =0.25mA	300	-	-	V
Drain-Source Leakage Current	I _{DSS}	V _{GS} =0V , V _{DS} =300V	-	-	1	μA
Gate To Source Leakage Current	I _{GSS}	V _{GS} =±30V , V _{DS} =0V	-	-	±100	nA
ON Characteristics						
Gate Threshold Voltage	V _{GS(th)}	V _{DS} =V _{GS} , I _D =0.25mA	2.0	-	4.0	V
Drain-Source On-State Resistance*	R _{DS(on)}	V _{GS} =10V , I _D =25A	-	68	88	mΩ
Forward Transconductance*	g _{fs}	V _{DS} =15V , I _D =25A	-	18	-	S
Dynamic Characteristics						
Input Capacitance	C _{iss}	V _{DS} =25V	-	3537	-	pF
Output Capacitance	C _{oss}	V _{GS} =0V	-	504	-	
Reverse Transfer Capacitance	C _{rss}	Freq.=1MHz	-	277	-	
Switching Characteristics						
Turn-On Delay Time	t _{d(on)}	V _{DD} =150V V _{GS} =10V I _D =25A R _G =1.2Ω	-	23	-	ns
Rise Time	t _r		-	49	-	
Turn-Off Delay Time	t _{d(off)}		-	98	-	
Fall Time	t _f		-	33	-	
Total Gate Charge	Q _g	V _{DS} =150V	-	225	-	nC
Gate to Source Charge	Q _{gs}	V _{GS} =10V	-	15	-	
Gate to Drain Charge	Q _{gd}	I _{DS} =25A	-	125	-	
Source-Drain Diode Characteristics						
Diode Forward Voltage	V _{SD}	V _{GS} =0V , I _S =25A	-	-	1.5	V
Continuous Source Current (Body Diode)*	I _{SD}		-	-	50	A
Max. Pulsed Current (Body Diode)*	I _{SM}		-	-	200	A
Reverse Recovery Time	T _{rr}	V _{GS} =0V I _S =25A , T _J =25°C	-	516	-	ns
Reverse Recovery Charge	Q _{rr}	di _r /dt=100A/μs	-	4.16	-	μC

*Pulse Width ≤ 380 μs, Duty Cycle ≤ 2%.

Typical Performance Characteristics

Figure 1a Safe Operating Area

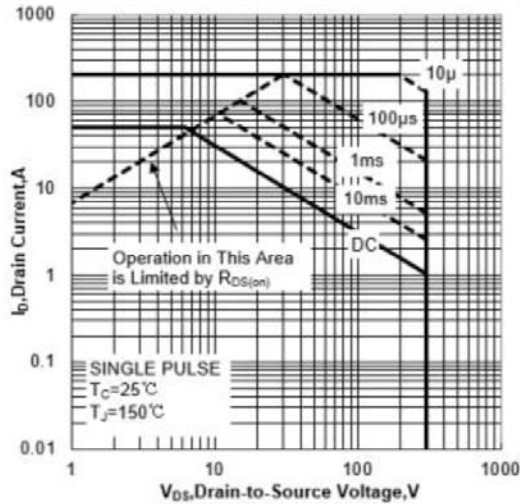


Figure 2 Power Dissipation

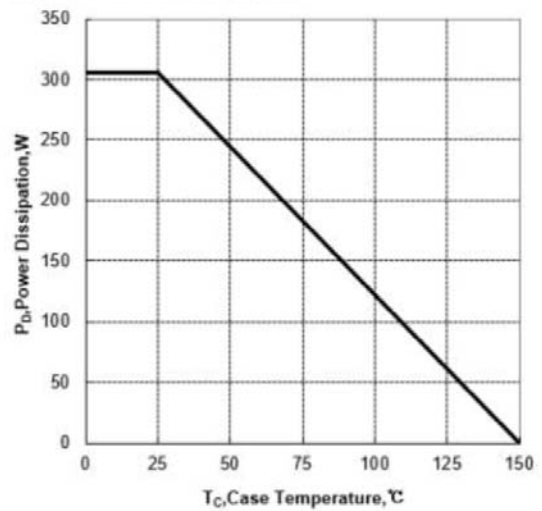


Figure 3 Max Thermal Impedance

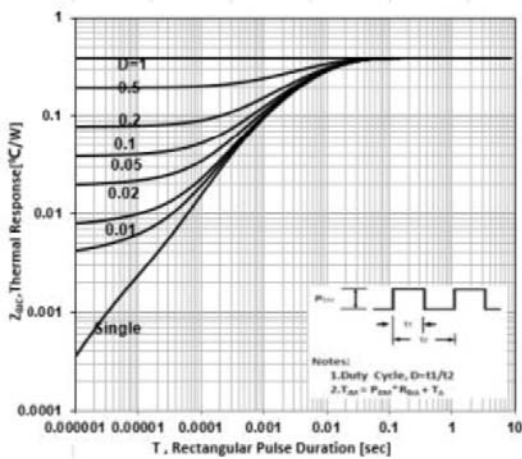


Figure 4 Typical Output Characteristics

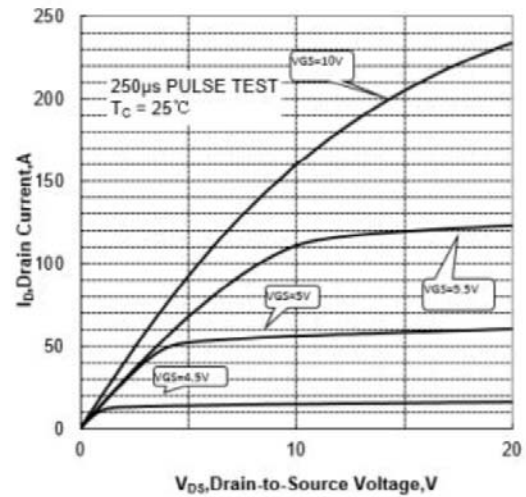


Figure 5 Typical Transfer Characteristics

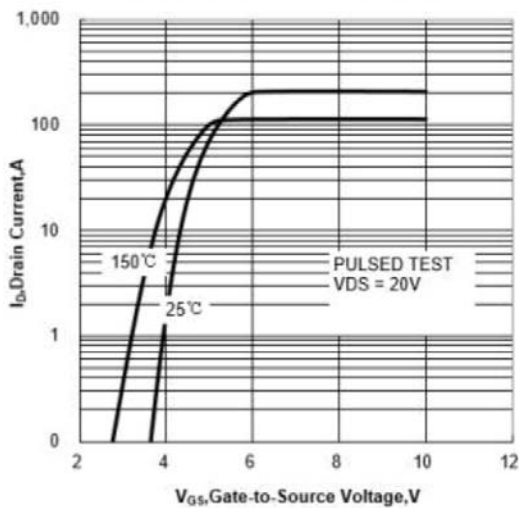
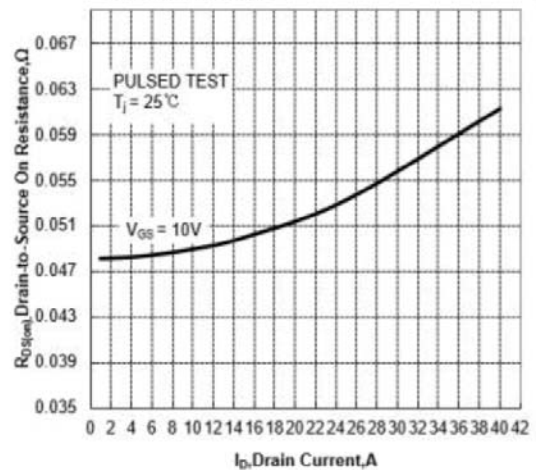


Figure 6 Typical Drain to Source ON Resistance vs Drain Current



Typical Performance Characteristics

Figure 7 Typical Drain to Source On Resistance vs Junction Temperature

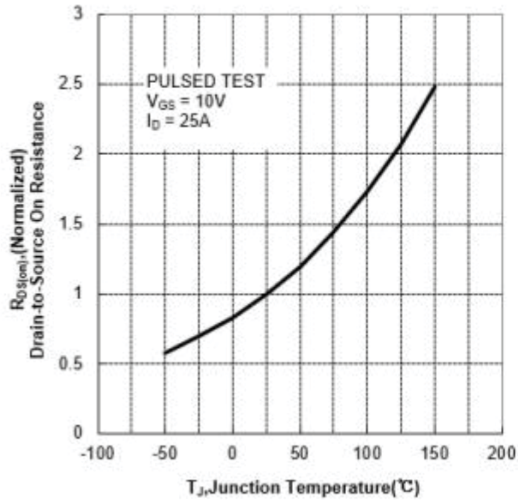


Figure 8 Typical Threshold Voltage vs Junction Temperature

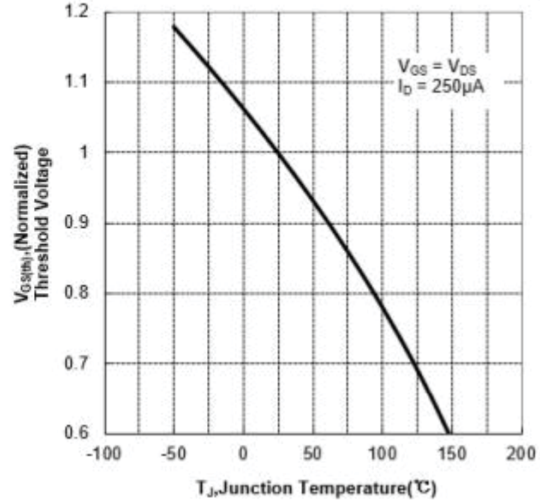


Figure 9 Typical Breakdown Voltage vs Junction Temperature

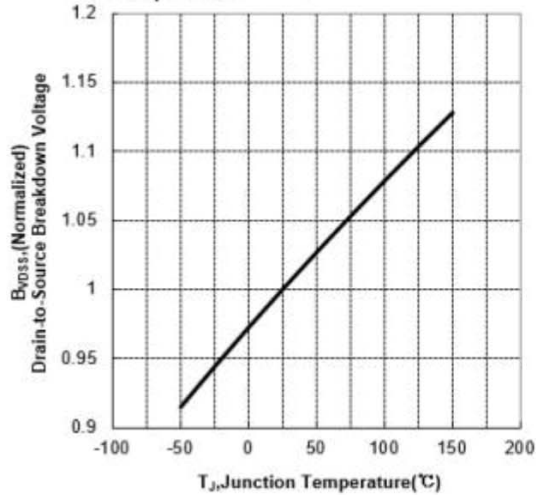


Figure 10 Typical Capacitance vs Drain to Source Voltage

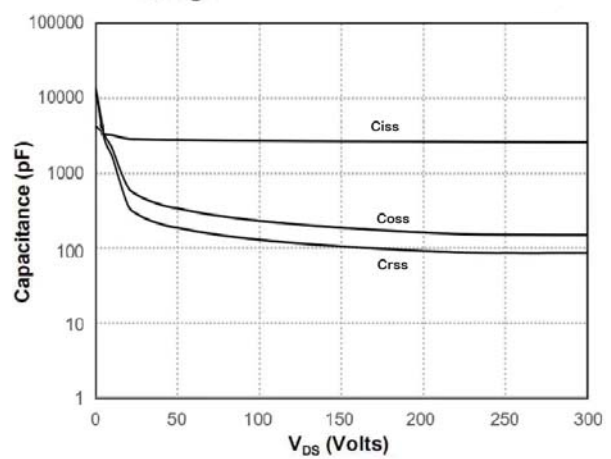
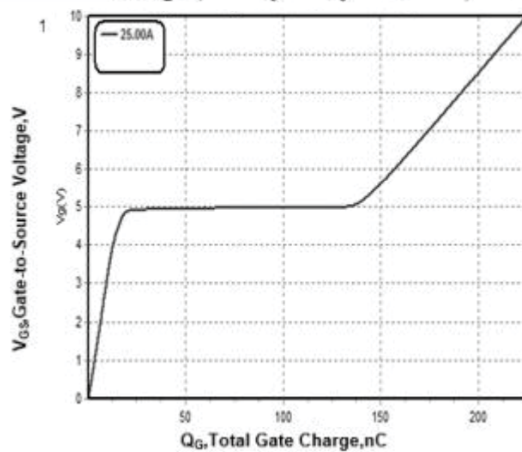


Figure 11 Typical Gate Charge vs Gate to Source Voltage (V_{ds}: 150.0V, I_g: 1.00mA, V_{gon}: 10.0V, I_d: 25.00A)



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