30V N-Channel Enhancement Mode MOSFET

V_{DS}=30V

$R_{DS(ON)}$, Vgs@10V,Ids@30A = 8.5mΩ

$R_{DS(ON)}$, Vgs@4.5V,Ids@20A =13mΩ

FEATURES

Advanced trench process technology

High density cell design for ultra low on-resistance

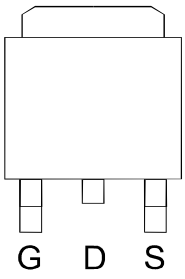
Specially designed for DC/DC converters and motor drivers

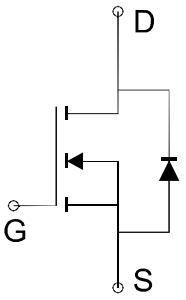
Fully characterized avalanche voltage and current

PIN CONFIGURATION

(TO-252)

Top View





Absolute Maximum Ratings (T_A=25℃ Unless Otherwise Noted)

Parameter		Symbol	Limit		Unit
Drain-Source Voltage		V_{DSS}	30		V
Gate-Source Voltage		V_{GSS}	±20		V
Continuous Drain Current		I_D	50		A
Pulsed Drain Current		I_{DM}	100		A
Maximum Power Dissipation	T_A=25℃	P_D	50		W
	T_A=70℃		23		
Operating Junction and Storage Temperature Range		T_J, Tstg	-55 to 150		℃
Avalanche Energy with Single Pulse(L=0.5mH,Rg=25Ω)		E_{AS}	110		mJ
Thermal Resistance-Junction to Ambient*		$R_{\theta JA}$	T≦10 sec	15	℃/W
			Steady State	40	
Thermal Resistance-Junction to Case		$R_{\theta JC}$	20		℃/W

*The device mounted on 1in^2 FR4 board with 2 oz copper

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Electrical Characteristics (T_A=25℃ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	30			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1	1.6	3	V
I_{GSS}	Gate-Body Leakage	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=24V, V_{GS}=0V			1	μA
$R_{DS(ON)}$	Drain-Source On-Resistance	V_{GS}=10V, I_D=30A		6.5	8.5	mΩ
		V_{GS}=4.5V, I_D=20A		10	13	
DYNAMIC						
Qg	Total Gate Charge	V_{DS}=15V, V_{GS}=10V, I_D=35A		22	25	nC
Qgs	Gate-Source Charge			4.5		
Qgd	Gate-Drain Charge			4		
Ciss	Input Capacitance	V_{DS}=15V, V_{GS}=0V, f=1MHz		1100	1300	pF
Coss	Output Capacitance			240		
Crss	Reverse Transfer Capacitance			90		
Rg	Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz		2.5		Ω
$t_{d(on)}$	Turn-On Delay Time	R_L=15Ω, V_{GEN} =10V, I_D=1A V_{DD}=15V, R_G=24Ω		13	17	ns
t_r	Turn-On Rise Time			10	13	
$t_{d(off)}$	Turn-Off Delay Time			46	58	
t_f	Turn-Off Fall Time			7	10	
SOURCE-DRAIN DIODE						
I_S	Max.Diode Forward Current				20	A
V_{SD}	Diode Forward Voltage	I_S=20A, V_{GS}=0V		0.87	1.5	V

Note: Pulse test: pulse width＜=300us, duty cycle＜=2%

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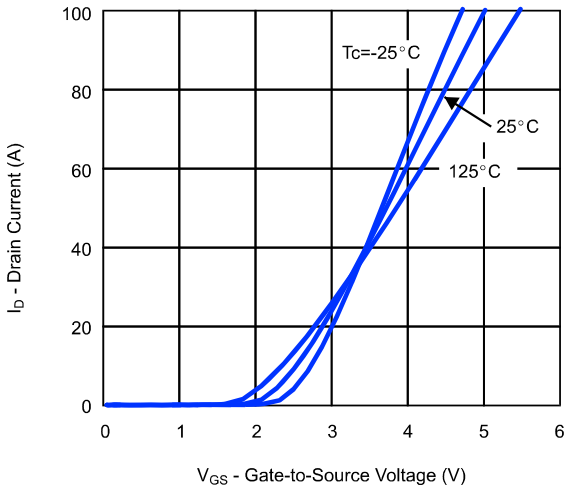
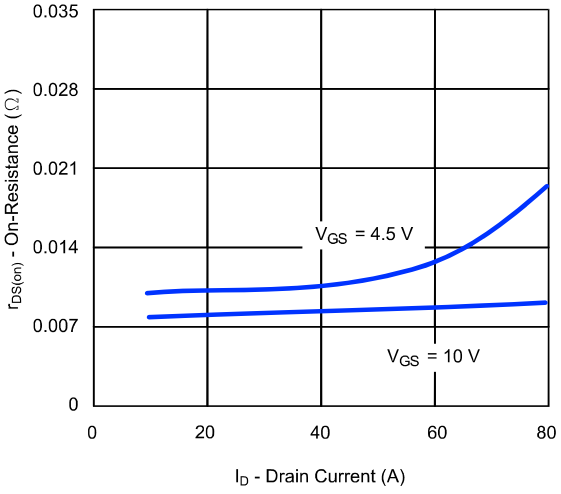
Typical Characteristics (T_J =25℃ Noted)

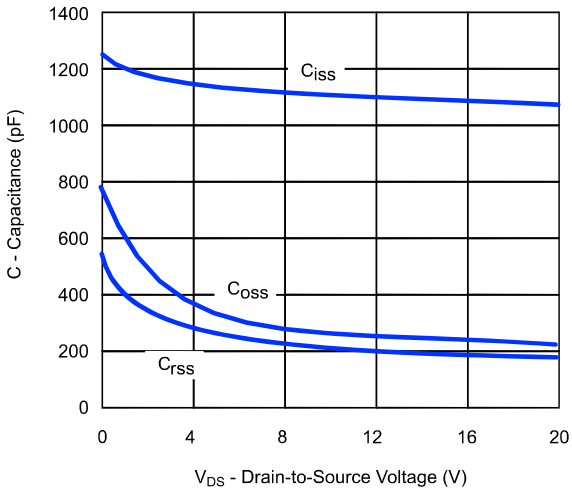
Transfer Characteristics



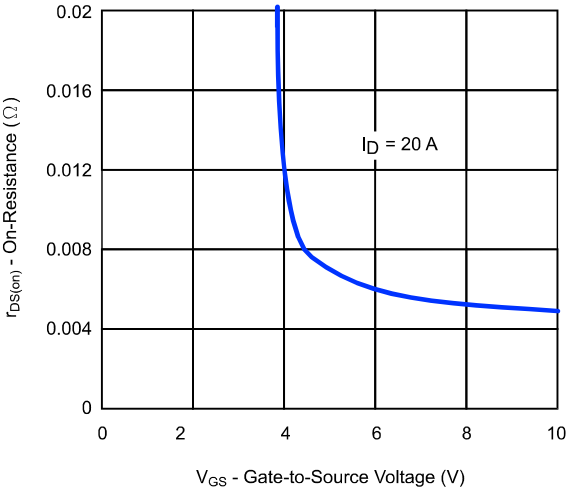
On-Resistance vs. Drain Current



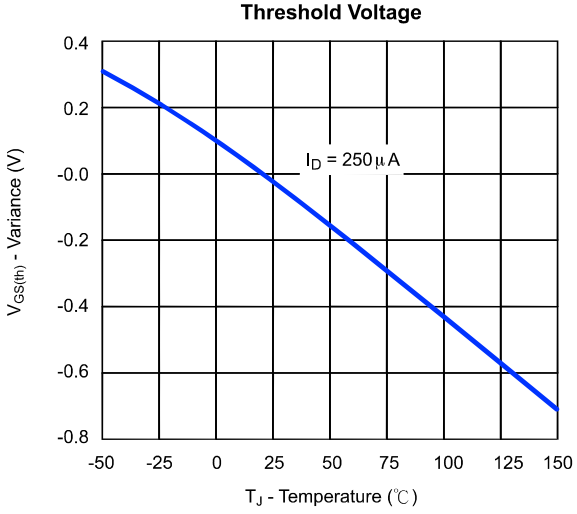
Capacitance



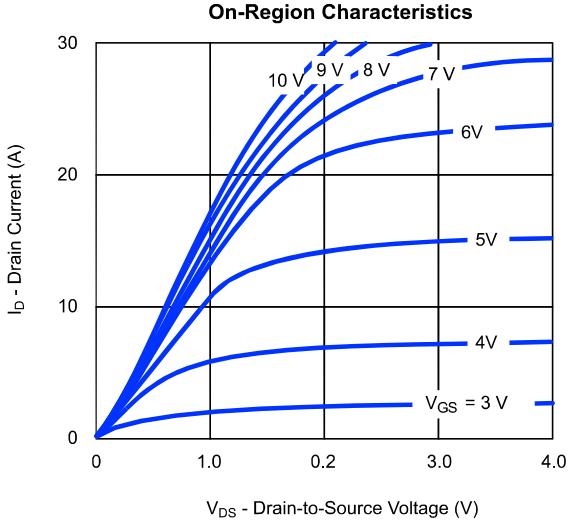
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



On-Region Characteristics



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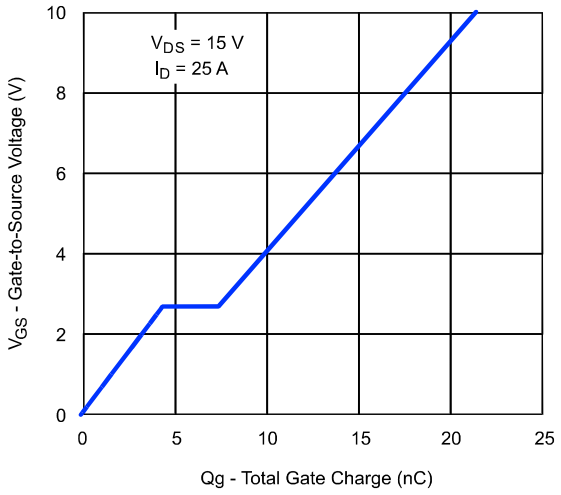
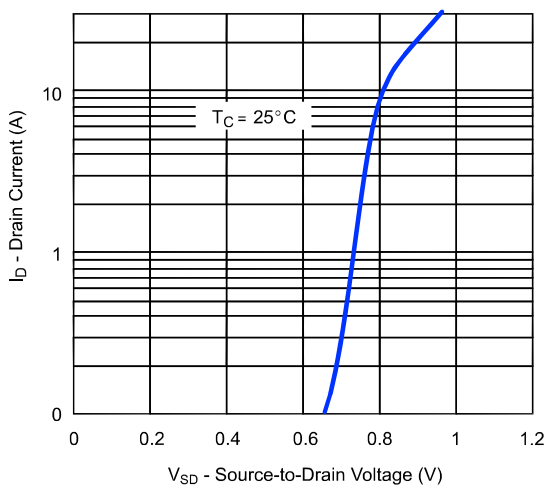
Typical Characteristics (T_J =25℃ Noted)

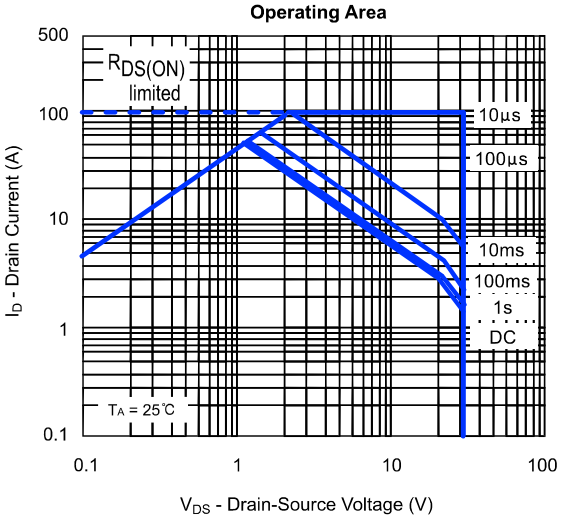
Gate Charge



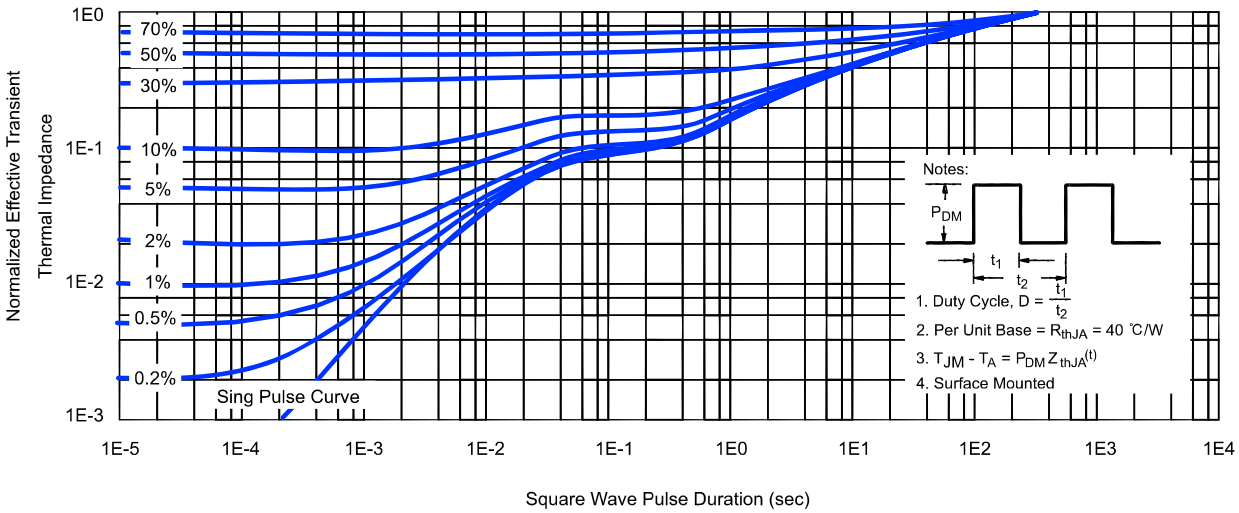
On-Resistance vs. Drain Current



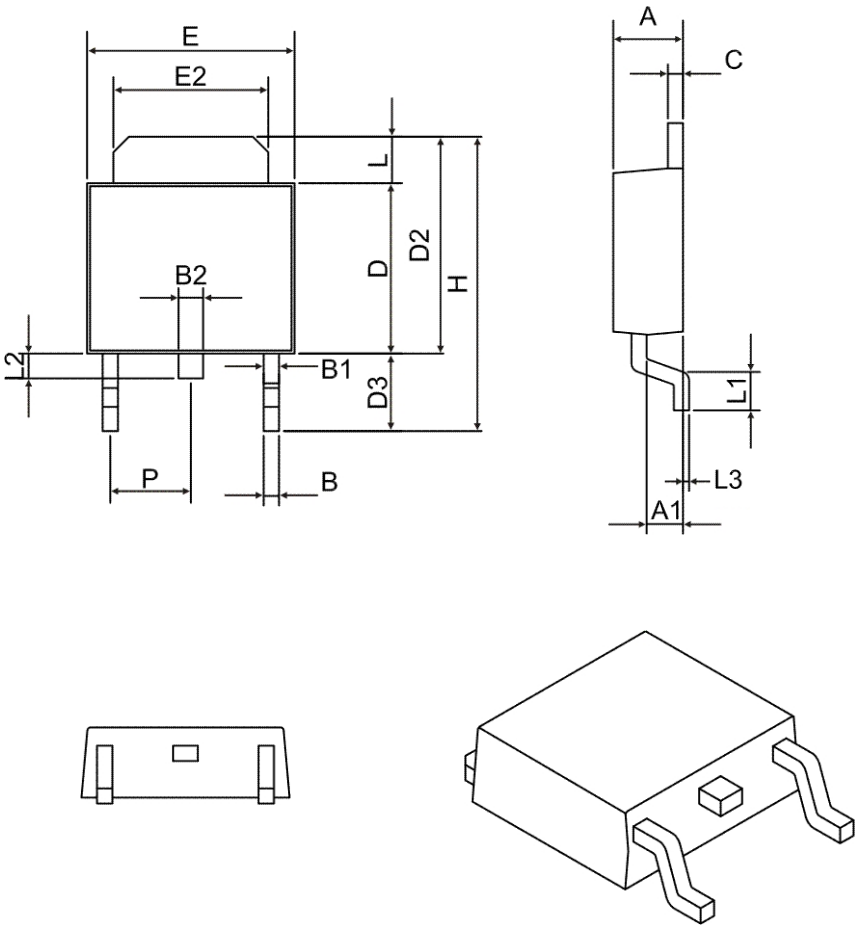
Maximum Forward Biased Safe Operating Area



Normalized Thermal Transient Impedance, Junction-to-Ambient



TO-252 Package Outline



SYMBOL	MILLIMETERS (mm)	
	MIN	MAX
A	2.00	2.50
A1	0.90	1.30
B	0.50	0.85
B1	0.50	0.80
B2	0.50	1.00
C	0.40	0.60
D	5.20	5.70
D2	6.50	7.30
D3	2.20	3.00
H	9.50	10.50
E	6.30	6.80
E2	4.50	5.50
L	1.30	1.70
L1	0.90	1.70
L2	0.50	1.10
L3	0	0.30
P	2.00	2.80