25V N-Channel Enhancement Mode MOSFET

V_{DS}=25V

$R_{DS(ON)}$, Vgs@10V,Ids@45A = 6mΩ

$R_{DS(ON)}$, Vgs@4.5V,Ids@30A =9mΩ

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

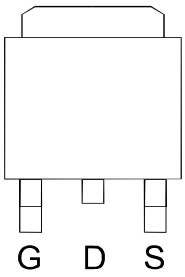
APPLICATIONS

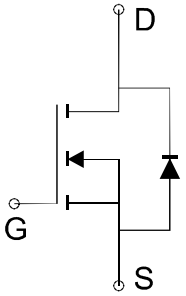
- Motherboard (V-Core)
- Portable Equipment
- DC/DC Converter
- Load Switch
- LCD Display inverter
- IPC

PIN CONFIGURATION

(TO-252)

Top View





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

Parameter		Symbol	Limit		Unit
Drain-Source Voltage		V_{DSS}	25		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}	115		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

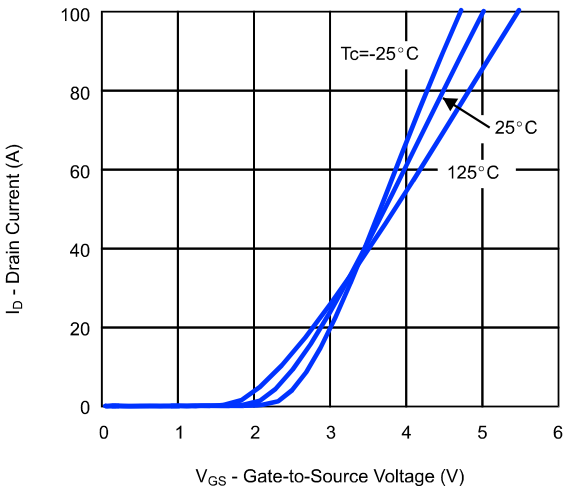
Electrical Characteristics (T_A=25℃ Unless Otherwise Specified)

Symbol	Parameter	Limit	Min	Typ	Max	Unit
STATIC						
BV_{DSS}	Drain-Source Breakdown Voltage	V_{GS}=0V, I_D=250μA	25			V
$V_{GS(th)}$	Gate Threshold Voltage	V_{DS}=V_{GS}, I_D=250μA	1	1.9	3	V
I_{GSS}	Gate-Body Leakage	V_{DS}=0V, V_{GS}=±20V			±100	nA
I_{DSS}	Zero Gate Voltage Drain Current	V_{DS}=20V, V_{GS}=0V			1	μA
$R_{DS(ON)}$	Drain-Source On-State Resistance[a]	V_{GS}=10V, I_D=45A		4.5	6	mΩ
		V_{GS}=4.5V, I_D=30A		7.5	9	
DYNAMIC						
Qg	Total Gate Charge	V_{DS}=15V, V_{GS}=10V, I_D=25A		33	40	nC
Qgs	Gate-Source Charge			12		
Qgd	Gate-Drain Charge			9.7		
Ciss	Input Capacitance	V_{DS}=15V, V_{GS}=0V, F=1MHz		1900	2200	pF
Coss	Output Capacitance			343		
Crss	Reverse Transfer Capacitance			93		
Rg	Gate Resistance	V_{DS}=0V, V_{GS}=0V, f=1MHz		2.4		Ω
td(on)	Turn-On Delay Time	R_L=15Ω, V_{GEN}=10V, I_D=1A V_{DD}=15V, R_G=6Ω		17	22	ns
tr	Turn-On Rise Time			12	16	
td(off)	Turn-Off Delay Time			63	75	
tf	Turn-Off Fall Time			9	12	
SOURCE-DRAIN DIODE						
I_S	Max.Diode Forward Current				20	A
V_{SD}	Diode Forward Voltage	I_S=20A, V_{GS}=0V		0.85	1.2	V

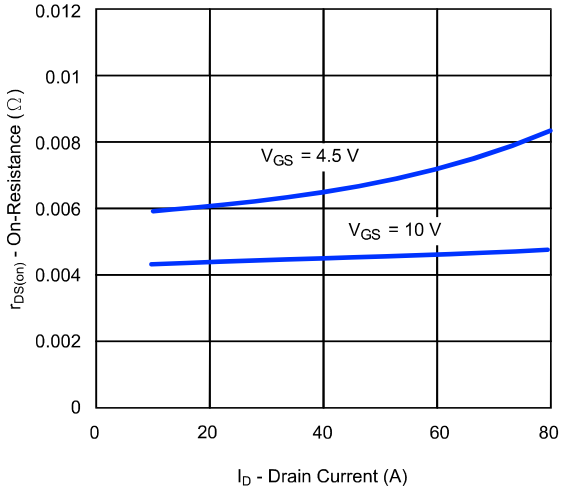
Note: a.Pulse test: pulse width＜=300us, duty cycle＜=2%

Typical Characteristics (T_J =25℃ Noted)

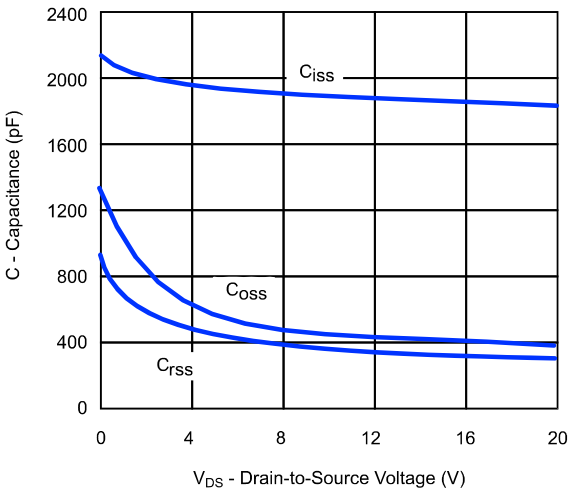
Transfer Characteristics



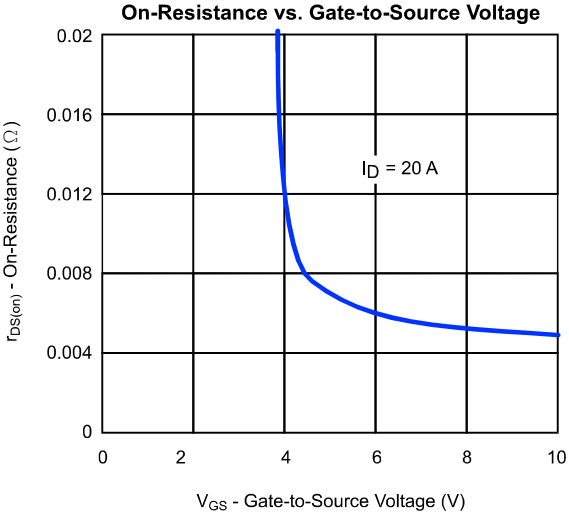
On-Resistance vs. Drain Current



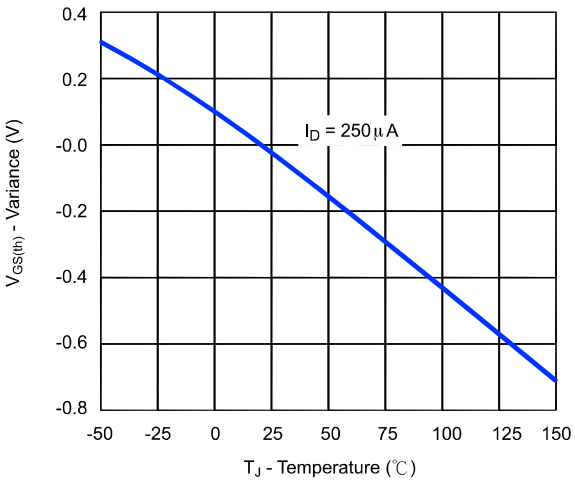
Capacitance



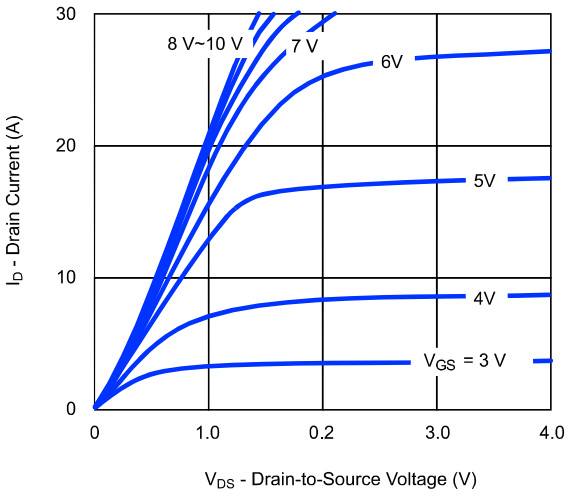
On-Resistance vs. Gate-to-Source Voltage



Threshold Voltage



On-Region Characteristics



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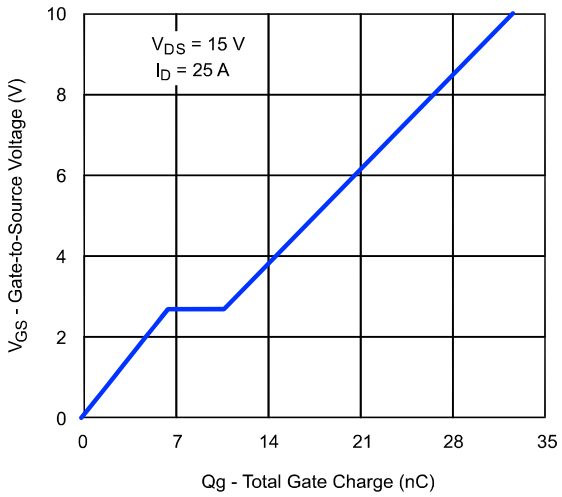
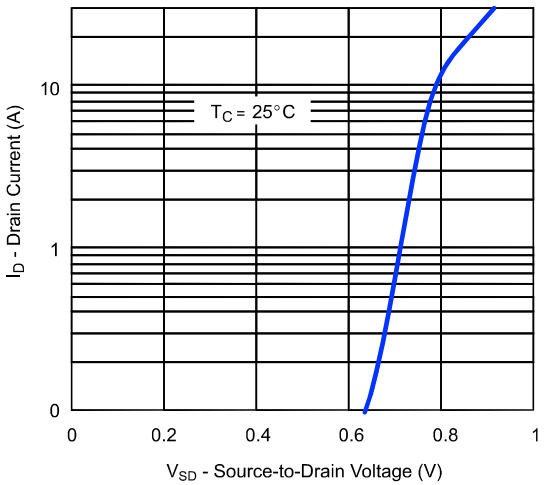
Typical Characteristics (T_J =25℃ Noted)

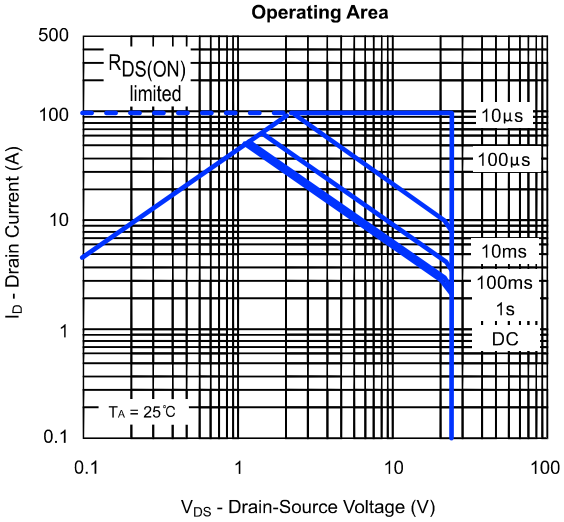
Gate Charge



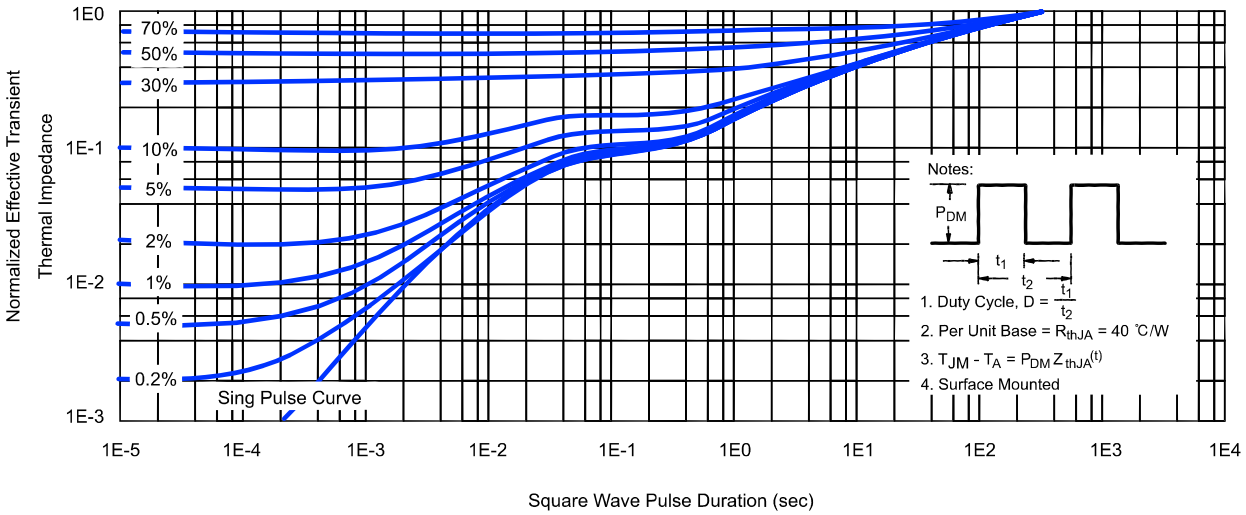
On-Resistance vs. Drain Current



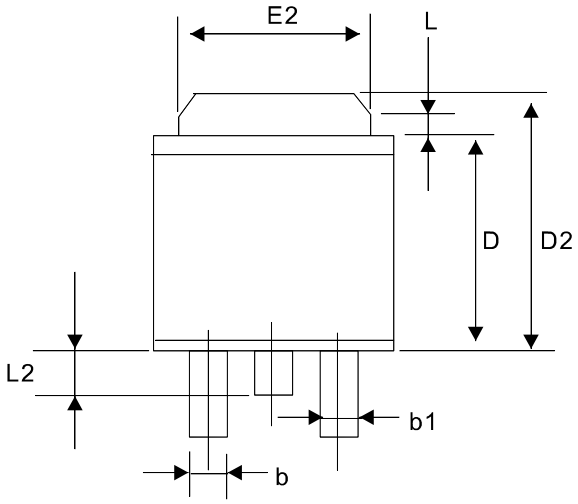
Maximum Forward Biased Safe Operating Area

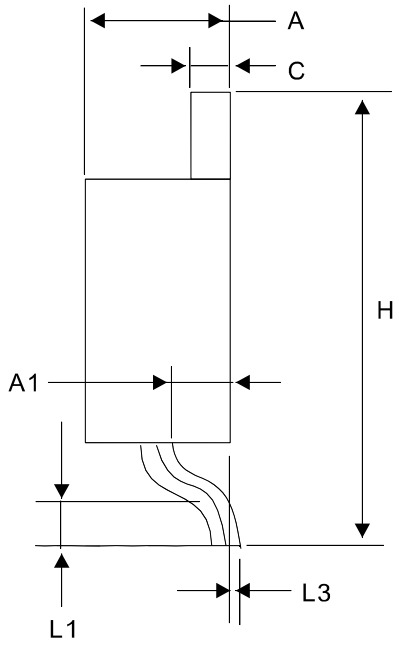


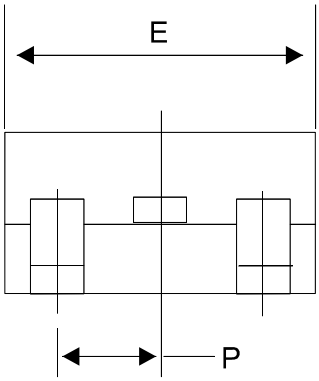
Normalized Thermal Transient Impedance, Junction-to-Ambient



TO-252 Package Outline







SYMBOL	MILLIMETERS		INCHES	
	MIN	MAX	MIN	MAX
A	2.250	2.350	0.089	0.093
A1	0.950	1.050	0.037	0.041
C	0.490	0.530	0.019	0.021
E	6.400	6.600	0.252	0.260
E2	5.300	5.450	0.209	0.215
D	6.000	6.200	0.236	0.244
D2	7.100	7.300	0.280	0.287
H	9.700	10.100	0.382	0.398
L	0.600	Ref	0.024	Ref
L1	1.425	1.625	0.056	0.064
L2	0.650	0.850	0.026	0.033
L3	0.020	0.120	0.001	0.005
b	0.770	0.850	0.030	0.033
b1	0.840	0.940	0.033	0.037
P	2.290	BSC	0.090	BSC