UNIKC Semiconductor

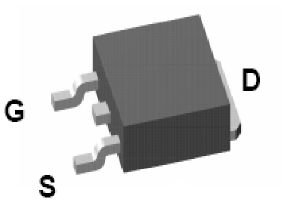
RoHS Compliant

P1504EDG

P-Channel Enhancement Mode MOSFET

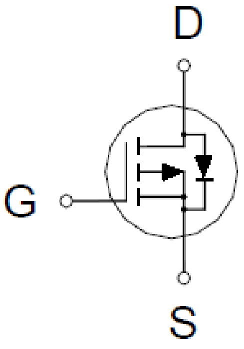
PRODUCT SUMMARY

$V_{(BR)DSS}$	$R_{DS(ON)}$	I_D
−40V	15mΩ @V_{GS} = -10V	-45A



TO-252

100% Rg tested
100% UIS tested



ABSOLUTE MAXIMUM RATINGS (T_A = 25 °C Unless Otherwise Noted)

PARAMETERS/TEST CONDITIONS		SYMBOL	LIMITS	UNITS
Drain-Source Voltage		V_{DS}	-40	V
Gate-Source Voltage		V_{GS}	±20	V
Continuous Drain Current	T_A= 25 °C	I_D	-45	A
	T_A= 70 °C		-36	
Pulsed Drain Current[1]		I_{DM}	-150	
Avalanche Current		I_{AS}	-45	
Avalanche Energy[2]	L=0.1mH	E_{AS}	102	mJ
Power Dissipation	T_C= 25 °C	P_D	50	W
	T_C= 70°C		32	
Junction & Storage Temperature Range		T_j, T_{stg}	-55 to 150	°C

THERMAL RESISTANCE RATINGS

THERMAL RESISTANCE	SYMBOL	TYPICAL	MAXIMUM	UNITS
Junction-to-Ambient	$R_{\theta JA}$		75	°C / W
Junction-to-Case	$R_{\theta JC}$		2.5	

[1] Pulse width limited by maximum junction temperature.

[2] V_{DD} = -20V . Starting T_J = 25°C.

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ELECTRICAL CHARACTERISTICS (T_J = 25 °C, Unless Otherwise Noted)

PARAMETER	SYMBOL	TEST CONDITIONS	LIMITS			UNITS
			MIN	TYP	MAX	
STATIC						
Drain-Source Breakdown Voltage	$V_{(BR)DSS}$	V_{GS} = 0V, I_D = -250μA	-40			V
Gate Threshold Voltage	$V_{GS(th)}$	$V_{DS} = V_{GS}$, I_D = -250μA	-1.7	-2.2	-3	
Gate-Body Leakage	I_{GSS}	V_{DS} = 0V, V_{GS} = ±20V			±100	nA
Zero Gate Voltage Drain Current	I_{DSS}	V_{DS} =-32V, V_{GS} = 0V			1	μA
		V_{DS} =-30V, V_{GS} = 0V, T_J = 55°C			10	
Drain-Source On-State Resistance[1]	$R_{DS(ON)}$	V_{GS} =-4.5V, I_D =-15A		19	29	mΩ
		V_{GS} =-10V, I_D =-25A		13	15	
Forward Transconductance[1]	g_{fs}	V_{DS} =-5V, I_D =-25A		24		S
On-State Drain Current[1]	$I_{D(ON)}$	V_{DS} = -5V, V_{GS} = -10V	-150			A
DYNAMIC						
Input Capacitance	C_{iss}	V_{GS} = 0V, V_{DS} = -15V, f = 1MHz		2700	2950	pF
Output Capacitance	C_{oss}			400	430	
Reverse Transfer Capacitance	C_{rss}			230	250	
Gate Resistance	R_g	V_{GS} = -15mV, V_{DS} = 0V, f = 1MHz		3.5	4.5	Ω
Total Gate Charge[2]	Q_g	V_{DS} =0.5$V_{(BR)DSS}$, V_{GS}= -10V,I_D = -25A		40	45	nC
Gate-Source Charge[2]	Q_{gs}			10	13	
Gate-Drain Charge[2]	Q_{gd}			5	8	
Turn-On Delay Time[2]	$t_{d(on)}$	V_{DS} =-20V , R_L = 0.75Ω ,I_D ≅ 1A, V_{GS}=-10V,R_{GEN}=6Ω		11		nS
Rise Time[2]	t_r			75		
Turn-Off Delay Time[2]	$t_{d(off)}$			89		
Fall Time[2]	t_f			35		
SOURCE-DRAIN DIODE RATINGS AND CHARACTERISTICS (T_J = 25 °C)						
Continuous Current	I_S				-25	A
Forward Voltage[1]	V_{SD}	$I_F = I_S$, V_{GS} = 0V		-0.7	-1.3	V
Reverse Recovery Time	t_{rr}	I_F = -25A, dI_F/dt = 100A / μS		28		nS
Reverse Recovery Charge	Q_{rr}			26		nC

[1] Pulse test : Pulse Width ≤ 300 μsec, Duty Cycle ≤ 2%.

[2] Independent of operating temperature.

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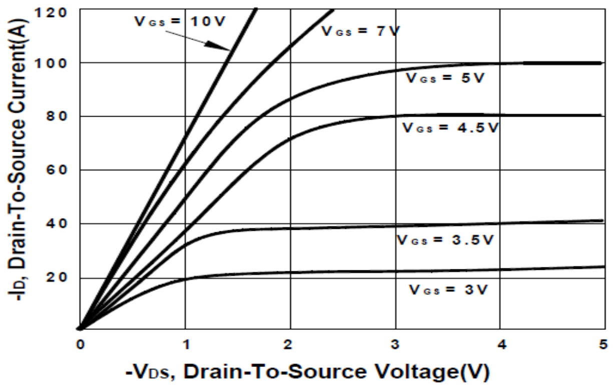
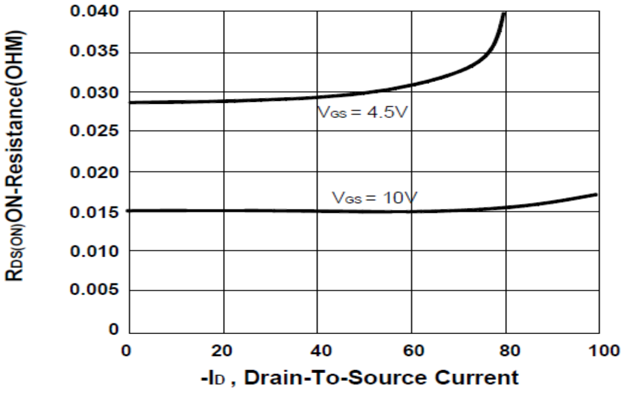
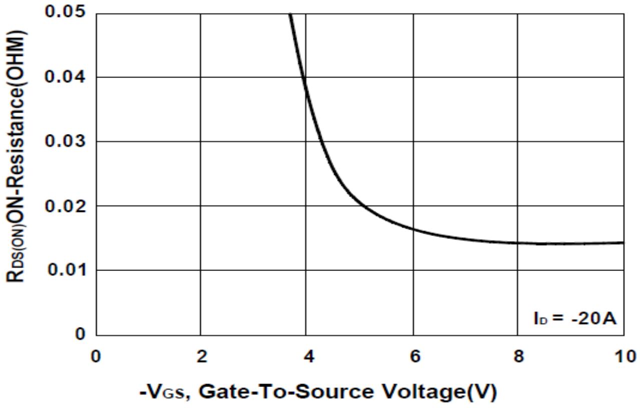
Output Characteristics



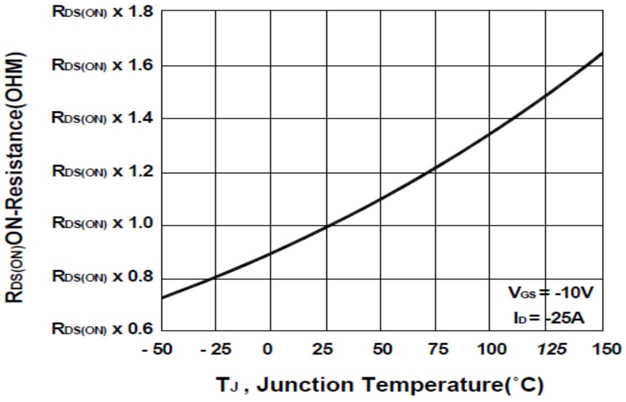
On-Resistance VS Drain Current



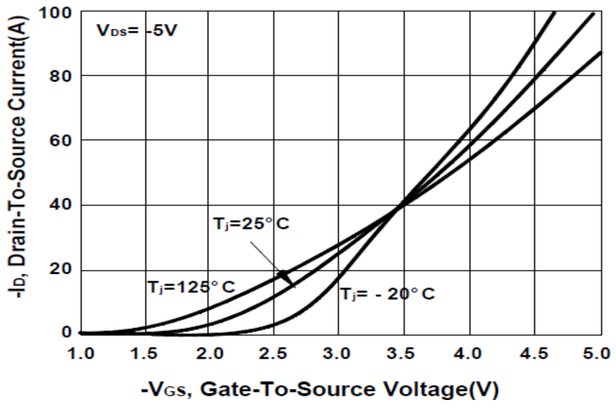
On-Resistance VS Gate-To-Source



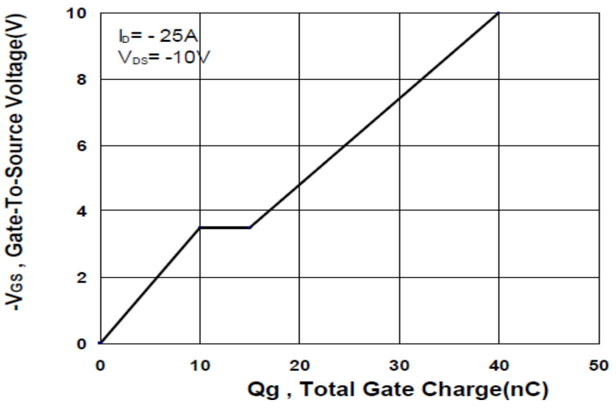
On-Resistance VS Temperature



Transfer Characteristics



Gate charge Characteristics



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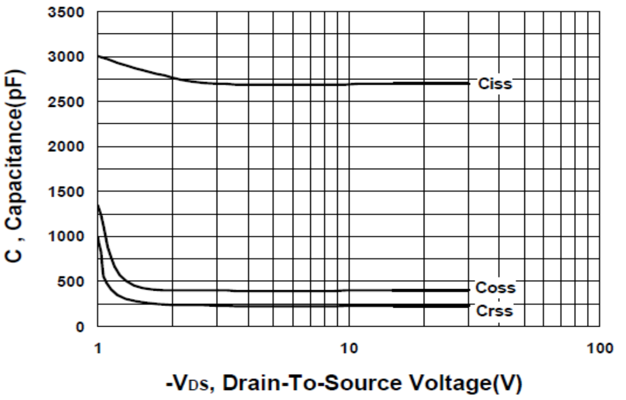
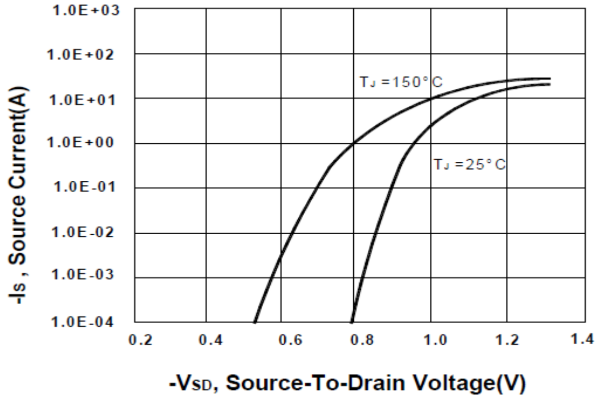
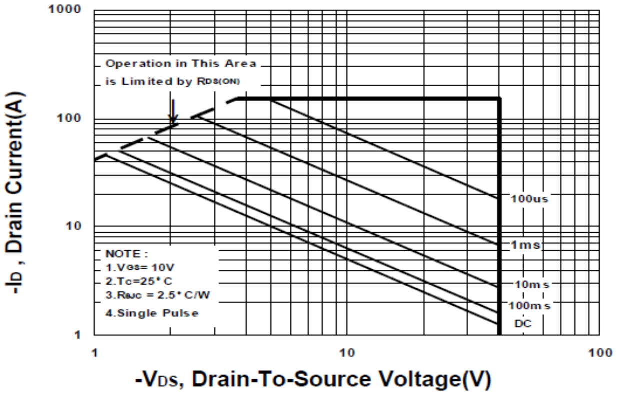
Capacitance Characteristic



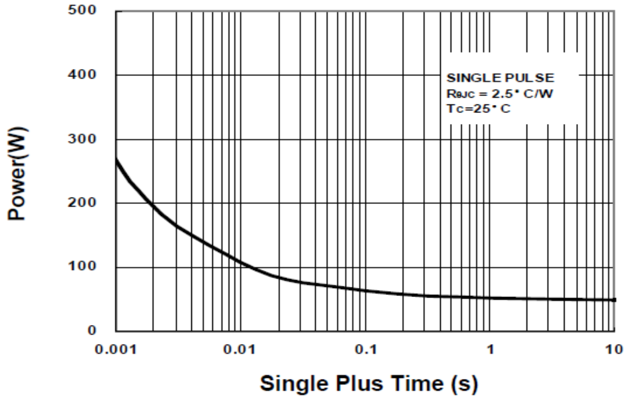
Body Diode Forward Voltage VS Source current



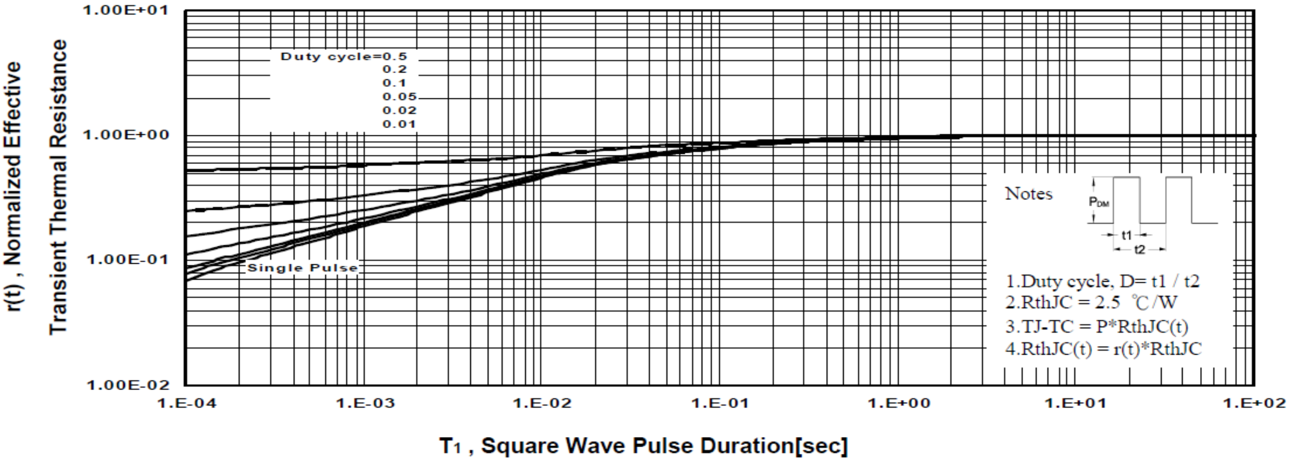
Safe Operating Area



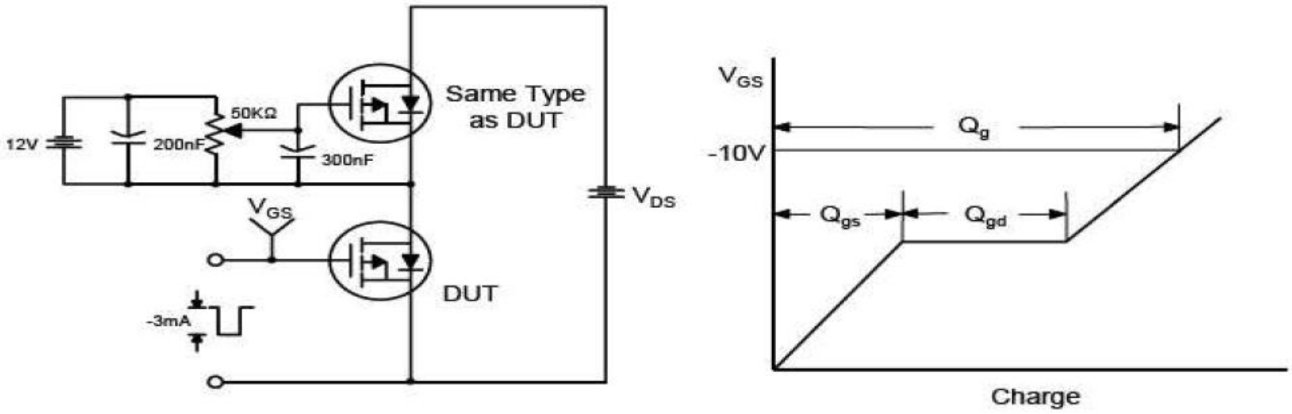
Single Pulse Maximum Power Dissipation



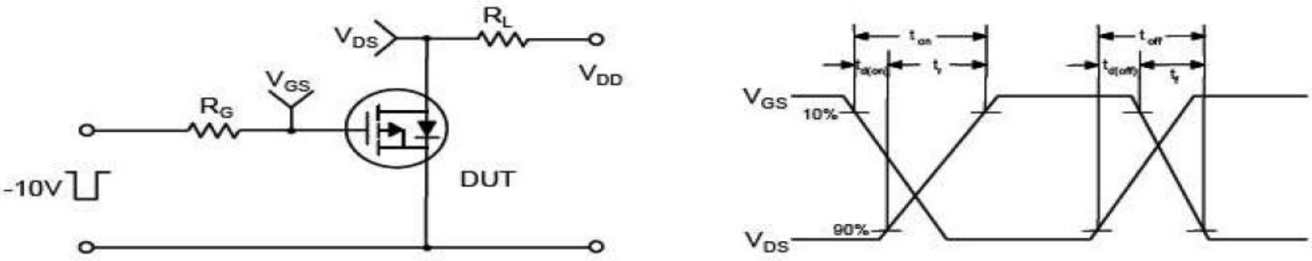
Transient Thermal Response Curve



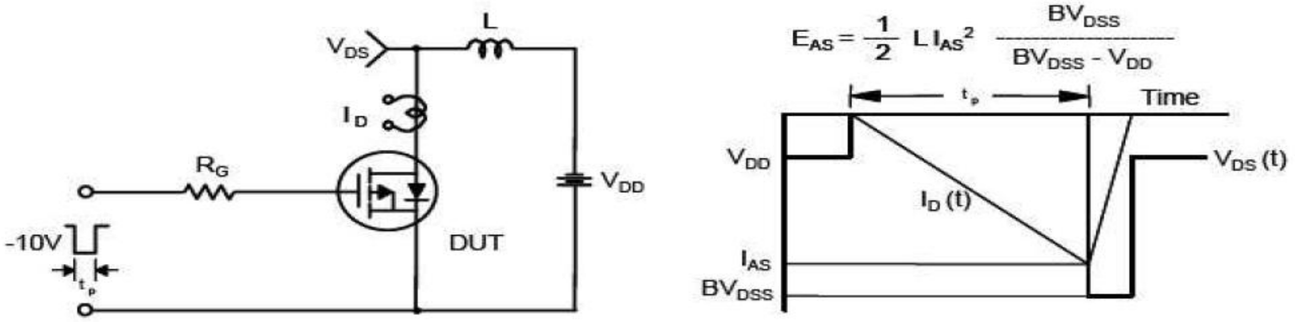
Gate Charge Test Circuit & Waveform



Resistive Switching Test Circuit & Waveforms



Unclamped Inductive Switching Test Circuit & Waveforms



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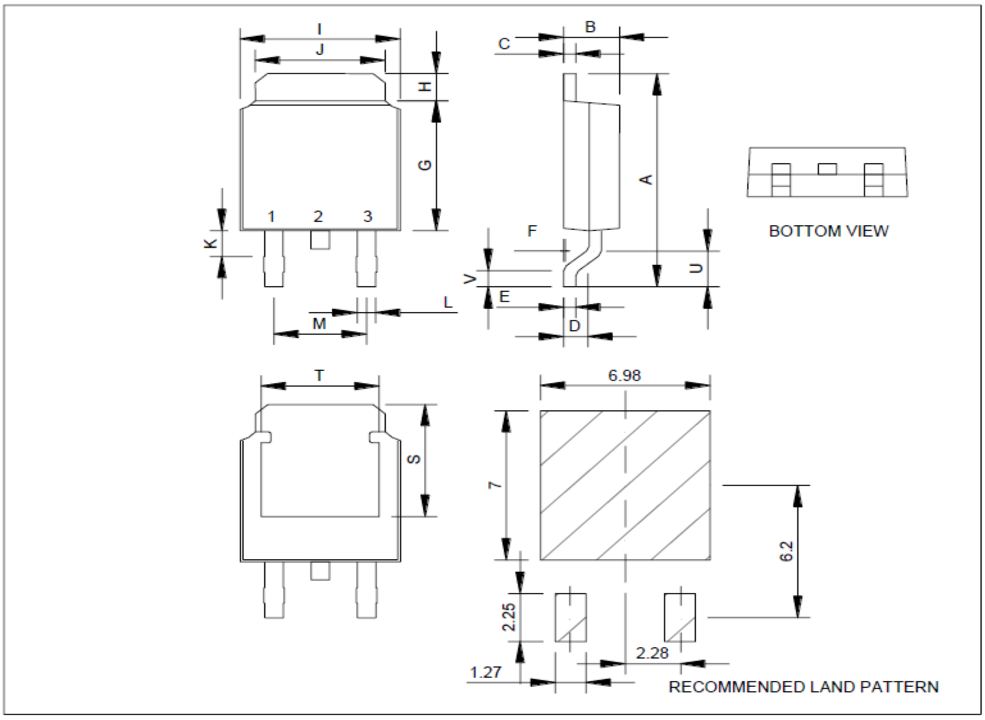
Package Dimension

TO-252 (DPAK) MECHANICAL DATA

Dimension	mm			Dimension	mm		
	Min.	Typ.	Max.		Min.	Typ.	Max.
A	8.9	10	10.41	J	4.8		5.64
B	2.1	2.2	2.4	K	0.15		1.1
C	0.4	0.5	0.61	L	0.4	0.76	0.89
D	0.82	1.2	1.5	M	4.2	4.58	5
E	0.4	0.5	0.61	S	4.9	5.1	5.3
F	0		0.2	T	4.6	4.75	5.44
G	5.3	6.1	6.3	U	1.4		1.78
H	0.9		1.7	V	0.55	1.25	1.7
I	6.3	6.5	6.8				



*因为各家封装模具不同而外观略有所差异，不影响电性及Layout。